Gleanings in Bee Culture

VOL. XLIX June, 1921 NUMBER 6

You all know the value of good Queens. When buying why not buy the BEST. Our Queen-rearing Apiary, in charge of Henry Perkins, will be able to supply the "Best" Queens obtainable shortly after April 1st.

Send in your order at once to avoid delay in securing your requirements. Prices very attractive. Satisfaction guaranteed.

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Is yet the same good old place to send that Bee Supply order, and if you order without our catalog and special price list of Queens, Live Bees and **Griggs Non-Robbing Bottom-Board**, Hive Stand and Feeder Combined, we both lose money.

A Full Line of ROOT QUALITY GOODS carried at all times.

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The Old Reliable Three-Banded Italians

Booking orders now for 1921. Queens ready April 1st. My Italians are of an exceptionally vigorous and long-lived stock strain of bees. They are gentle, prolific, very resistant to foul brood, and the best of honey gatherers. I have sold a good many queens to parties who are using them in stamping out foul brood. Orders booked for one-fourth cash in advance before delivery. Will guarantee safe arrival in the United States and Canada. Descriptive circular and price list free.

Prices April, May, and June				July to November			
	1	6	12	1	6	12
Untested	$1.50	$8.00	$15.00	$1.25	$6.50	$12.50
Select Untested	1.75	9.00	16.00	1.50	8.00	15.00
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Select Tested	3.00 each			$3.00 each		

No order for parcel packages of less than one.

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723 C Street
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SAVE YOUR BEES' TIME

USE AIRCO FOUNDATION—The only comb foundation on the market which has cell base most closely resembling that in the natural comb. The bees do not have to make over the cell base, therefore Airco saves time which is valuable, especially during a heavy honey flow.

AIRCO FOUNDATION is milled from wax refined by a new process which insures a tougher and more transparent product without the use of acid or injurious chemicals.

NOTE—Airco Foundation is absolutely the only foundation on the market which is made from these new process mills with corrected cell base.

THE A. I. ROOT COMPANY OF CALIFORNIA

Los Angeles: 1804 E. 15th Street — San Francisco: 3234 Main Street

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Editorial Staff

Geo. S. Demuth and E. R. Root, Editors
A. I. Root, Editor Home Dept.
Iona Fowls, Assistant Editor
H. G. Rowe, M'n'g Editor

This is a MUTH IDEAL VEIL. $1.50 will bring this veil to you direct from us or any G. B. Lewis distributer.

Do you know this fellow? I can't say anything nice about him here—he wouldn't like it. Funny smile, isn't it? The photographer's not to blame either because it's just ME—Clif. Muth.

¶ Have you been stung much this year? So have I, but I mean by bees. If you had an "IDEAL BEE VEIL" you could smile too (if the Photographer told you to). Really, they're good; get one.

¶ Did you get a list of our special quotations on supplies? There's a saving from 20 to 25c on your dollar when you buy from us.

¶ Got any honey you want to sell?

¶ We render wax from your old comb. Send for shipping tags.

¶ Need any good queens? Dandies, $2.00, six for $10.50.

¶ By the way, that's a good veil.

THE FRED W. MUTH CO.
Pearl and Walnut Cincinnati, Ohio

"SUPERIOR" FOUNDATION

Yes, we are ready for the rush. Many tons now ready for shipment, and our machines are running to utmost capacity. Use the best. If your dealer can't supply you, write us for price, stating quantity required. We also accept beeswax for foundation or supplies.

"Everything in Bee Supplies"

SUPERIOR HONEY COMPANY
OGDEN, UTAH.
(Manufacturers of Weed Process Foundation)

Indianapolis Can Give You Some Real Beekeeping Service

We ship your order the same day it is received. Let us give you some of this service. Catalog for the asking. Write for prices on beeswax

THE A. I. ROOT COMPANY
873 Massachusetts Avenue, Indianapolis, Ind.

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SUPPLIES

A Superior Quality At Less Cost

In offering supplies at our low prices, we are interested primarily in reducing the beekeeper's cost of producing Honey.

We realize it is impossible for the honey producer to reduce his cost of production unless he can buy his supplies at a reasonably low cost.

Our superior-quality supplies at our low prices are the solution to this problem.

We invite comparison of our prices on items listed below with the prices being charged by other manufacturers, and we wish to again emphasize the fact that the Diamond Match Co.'s supplies which we are offering are the best obtainable at any price, notwithstanding competitors' claims of superiority on the mere strength of their higher prices.

Hives, Supers, etc., listed below are in the flat, and are complete with Hoffman frames, nails, metal rabbets, and all inside fixtures.

One-story Dovetailed Hive

Five 8-frame	$16.00
Five 10-frame	16.90

Full-Depth Supers

Five 8-frame	$8.00
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Shallow Extracting Supers

Five 8-frame	$6.00
Five 10-frame	6.50

No. 1 Style Comb Honey Supers

Five 8-frame	$5.75
Five 10-frame	6.25

Standard Hoffman Frames

100	$8.50
500	40.00

Shallow Extracting Frames

100	$6.70
500	32.50

Our Incomparable Quality Foundation

Medium Brood	Thin Super	Light Brood
5 lbs. .... 82c per lb.	5 lbs. .... 90c per lb.	5-lb. lots.. 85c per lb.
25 lbs. ....81c per lb.	25 lbs. .... 89c per lb.	25-lb. lots.. 84c per lb.
50 lbs. .... 80c per lb.	50 lbs. .... 88c per lb.	50-lb. lots.. 83c per lb.

Especially prepared Beehive White paint, one-half gallon cans..$2.10

Hoffman & Hauck, Inc.

Woodhaven, New York

HONEY MARKETS

U. S. Government Market Reports.

SHIPPING POINT INFORMATION, MAY 17.

SOUTHERN CALIFORNIA, LOS ANGELES.—Supplies of white honey light, of light amber grades heavy. Poor wire inquiry, movement slow, market dull. Carloads f. o. b. usual terms, per lb., white orange blossom 10-12c, white sage 10½-12½c, white alfalfa 7½-8½c, light amber sage 8-9c, light amber alfalfa 6½-8c. Hawaiian, white 7c, honeydew honey 4½c.

Recent hot winds have badly hurt orange and sage prospects, and with southern sage already seriously damaged by cold and dry weather, a very light crop of the lighter-colored honeys is forecasted. The alfalfa crop is probably normal. High retail prices are still maintained thruout California, and hurt honey distribution locally. Some large shippers expect a firm market on account of light crop this year; other factors are still pessimistic. New honey will move in light quantities this month and next; but shipments in large quantities are not expected before July. Beeswax sacked, in less than carlots, light 25-30c, dark low as 23c per lb.

INTERMOUNTAIN REGION, COLORADO AND IDAHO.—Shipments light; what sales being made are largely locally or to near-by towns. Fancy white alfalfa extracted is reported offered by some shippers at 7½c per lb. Other organizations continue to hold for higher prices. Inquiry from domestic trade very light; but inquiry from import trade reported to be increasing.

TEXAS POINTS.—The storm period in April killed large amounts of brood by chilling; put an end to the expected early mesquite flow, and cut down the huajilla flow to perhaps one-fourth of normal yield. Horsemint and summer mesquite flows should be good. The beekeeper is being paid on the basis of 12c per lb. for light amber extracted. Shipments from Texas are largely to comparatively near-by points, practically nothing going to the larger markets of the East.

NEW YORK STATE.—Bees are in good condition, except short of stores. The amount of last year's crop still on hand varies widely with different sections of the State. Some white clover honey is quoted at 17c per lb. in 10-lb. pails, or 15c in larger lots. Buckwheat honey is listed at 12c per lb. in 10-lb. pails, or 10c in larger lots.

TELEGRAPHIC REPORTS FROM IMPORTANT MARKETS.

BOSTON.—No carlot arrivals since last report. Almost no trading except in Porto Rico stock. Light demand, partly on account of low price of sugar and competition of maple products. Prices practically unchanged. Comb: Sales to retailers very few: New York, 24-section cases white clover No. 1, heavy $8.50-9.00, light $7.00-7.50; Vermont, 20-section cases white clover No. 1, heavy $8.00-8.50, light $7.00-7.50. Extracted: Sales to confectioners and bottlers, Porto Rico, amber, per gal., 80-83c. California, per lb., white sage occasional small lots 18-19c. Brokers' quotations delivered Boston, nominal prices unchanged, follow: California, per lb., white sage 15-16c, light amber alfalfa 10-14c, amber alfalfa 7-9c. Beeswax: Practically no demand or movement. No sales reported.

CHICAGO.—Since last report 2,000 lbs. Wis., 2,500 lbs. Ia., 1,500 lbs. Colo., 2,000 lbs. Minn., 1,800 lbs. Calif., 1,600 lbs. Ohio arrived. Extracted: Market weak and movement slow, particularly on light amber. Sales to bottlers, per lb., Iowa, Montana. California, white alfalfa and clover 11½-12¼c, light amber alfalfa 8½-9¼c. Comb: Sales to retailers, Iowa, Wisconsin, Minnesota, 24-section cans No. 1 heavy, $7.00-7.25 per case, light weight, $5.50-6.00. Beeswax: Receipts moderate of domestic and foreign. Market about steady. Slow demand. Sales to harness makers and wholesale druggists, Oklahoma, Missouri, and Montana, light 31-33c, dark around 25c. Imported, Central American and African, light 23-26c.

CINCINNATI.—On account of the refusal of the principal honey and beeswax receivers to furnish the information necessary to report market conditions and prices in Cincinnati accurately and completely, no report can be published for this important honey and beeswax center.

CLEVELAND.—No carlot arrivals since last report. Supplies moderate. Demand light, movement slow, market dull, prices slightly lower. Dealers quote, extracted: In 5-case lots or more, per lb., western white sweet clover 11-12c, medium amber alfalfa 9c.

DENVER.—Market continues quiet. Demand and movement very light. Sales to jobbers, per lb., extracted: Colorado, white and light amber 10½-13c, amber 10c. Comb: Colorado, 24-section cases No. 1 white $6.08, No. 2, $5.63.

MINNEAPOLIS.—No carlot arrivals. Extracted: Supplies light. Demand and movement slow, market dull. Sales to retailers, bakers and confectioners, 60-lb. cans Wisconsin, white clover, very few sales 12c per lb. Nevada, white sweet clover, very few sales 13c per lb.

KANSAS CITY.—No carlot arrivals since last report. Supplies of comb light, of extracted liberal. Demand and movement moderate on comb, light on extracted. Extracted: Sales to jobbers, Missouri and Kansas, light various flavors 10-11c. California, Colorado, and Utah, extra light amber and white alfalfa 10c. Comb: Sales to jobbers, Missouri, 24-section cases alfalfa and sweet clover mixed, No. 1, $6.50-7.00.

NEW YORK.—Domestic l. c. l. receipts light. South American and West Indian receipts light. Supplies liberal. Practically no demand or movement, market weak and quiet, very few sales. Extracted: Spot sales to wholesalers, confectioners, bakers, and bottlers, domestic per lb., California, light amber and white alfalfa, best mostly 8-9c, off grade low as 7c; white orange blossom and white sage, best 11-12c, few 13c. West Indian and South American, refined, best 5¼-6c per lb.; or 55-60c, mostly 60c per gal., few high as 70c. Combs: Supplies very light. New Yorks, 24-section cases clover, few sales mostly $8.00. Beeswax: Domestic receipts very light. Foreign receipts moderate. Supplies liberal. Demand and movement very slow, market dull, very few sales. Spot sales to wholesalers, manufacturers, bleachers, and drug trade, per lb., South American and West Indian, crude light, best mostly 26-27c, few 28c, slightly darker 22-24c, dark 18-22c. African, dark best 17-18c, poorer low as 15c. Cuban, light 22-24c, dark 18-20c.

PHILADELPHIA.—Very light receipts, mostly near-by stock. Very little demand but market continues steady, with all buying on a small scale. Extracted: per gal., sales to bakers, Porto Rican, amber 55-60c. Cuban, light amber 65-70c. Demand light with very few sales. Beeswax: Receipts light, but market has a firmer tone Sales to manufacturers, Brazilian and Chilean, light 26-28c. African, dark 16-17c.

ST. LOUIS.—Comb: No receipts reported. Supplies light. Demand and movement limited to small lots, market very dull, practically no change in prices. Sales to retailers, Colorado, 24-section cases white clover and alfalfa No 1, heavy around $8.00, light $7.00. Extracted: No receipts reported. Advices from the South indicate movement of new crop will start from there probably in another month. Supplies are liberal. Almost no demand or movement, very few sales. Market weak. Sales to wholesalers, per lb., Missouri, Arkansas, and Mississippi, light amber various mixed flavors, in 5-gallon cans around 11c, dark around 10c; in bbls., dark amber various mixed flavors nominally low as 9c. Beeswax: Receipts very light. Supplies moderate. Very little demand or movement, only activity consists of buying of small lots by jobbers who anticipate turning stocks to manufacturers later on when business has recuperated. Sales to jobbers, Missouri, Arkansas, and Mississippi, ungraded, average country run mostly around 23c per lb. At present practically no demand from manufacturers.

GEORGE LIVINGSTON,
Chief of Bureau of Markets.

Special Foreign Quotations.

LIVERPOOL.—Since our last report there has been a better export inquiry, but prices are still lower. Some business has been done on the spot in Cuban, but the prices are not reported. The value of extracted honey at today's rate of exchange is about 6½c per lb. The value of beeswax in American currency is about 25c per lb. Taylor & Co.

Liverpool, England, May 6.

Opinions of Producers.

Early in May we sent to actual honey producers, scattered over the country, the following questions:

1. Has honey moved more rapidly during the past month than previously, and what percentage of last year's crops remain in the hands of the producer? Give answer in per cent.
2. What is the condition of the colonies at present compared with normal, considering strength, amount of brood, and amount of stores? Give answer in per cent.
3. What is the condition of the honey plants at this time compared with normal? Give answer in per cent.

For the southern States and California the following additional question was asked:

4. How does the honey flow thus far compare with normal? Give answer in per cent.

State.	Reported by	Moving more.	On hand.	Col. Con.	Plant Con.	Hon. Flow.
Ala.	J. M. Cutts		70	100	100	100
B. C.	W. J. Sheppard		0	100	100	...
Cal.	L. L. Andrews		3	90	60	15
Cal.	M. H. Mendleson		0	50	10	0
Cal.	Geo. Larinan		20	65	40	15
Col.	J. A. Green	No	10	100	100	...
Fla.	Ward Lamkin	No	5	100	100	100
Ida.	E. F. Atwater	No	8	100	100	...
Ill.	A. L. Kildow	5	15	100	50	...
Ind.	E. S. Miller	No	28	90	100	...
Ia.	F. Coverdale		0	100	100	...
Kan.	J. A. Nininger	No	0	60	80	...
La.	E. C. Davis		20	100	100	...
Md.	S. J. Crocker, Jr	No	5	100	90	...
Mass.	O. M. Smith	Yes	5	100	100	...
Miss.	R. B. Willson	Yes	10	100	125	75
Mo.	J. W. Romberger		0	90	90	...
Neb.	F. J. Harris		10	75	50	...
N. J.	E. G. Carr		5	50	50	...
N. Y.	Adams & Myers	Yes	10	150	100	...
N. Y.	F. W. Lesser	Yes	0	100	100	...
N. Y.	Geo. H. Rea	No	10	100	100	...
Ohio	Fred Leininger		0	100	100	...
Okla.	Chas. F. Stiles	No	0	80	70	...
Ont.	F. Eric Millen	No	1	110	100	...
Pa.	Harry Beaver	No	0	90	100	...
Tex.	F. A. Bowden	Yes	2	100	80	25
Tex.	J. N. Mayes		2	50	25	15
Tex.	H. B. Parks	No	5	90	66	25
Utah	M. A. Gill		10	100	110	...
Va.	J. H. Meek	No	100	100	100	...
Wash.	G. W. B. Saxton	No	15	110	110	...
Wis.	H. F. Wilson	Yes	18	25	98	...

Special Telegraphic Reports from the Clover Region.

Just as we are closing the forms for this issue white clover and alsike clover are coming into bloom in parts of the clover region. In some localities the hot and dry weather of the past few days threatened serious injury to the clovers, and earlier damages from frost were reported from certain regions, though timely showers in the northern portion of the clover region have given beekeepers renewed hope of a good crop. In order to obtain the latest information as to the condition of this important honey plant, telegrams were sent out to several producers in the regions affected. Replies have been received May 24, as follows:

STOUFFVILLE, ONT.—Clover prospects poor as a rule east of a line running north from Toronto to Orillia. Little injury from recent frost here in York county. No reports from other localities. Drought not severe here and broken yesterday by nice rains.—J. L. Byer.

FLINT, MICH.—About 25 per cent normal amount of clover, and damaged 50 per cent by frost and drouth.—Leonard S. Griggs.

PUTNAM, ILLS.—The drought of July and August, 1920, killed practically all the white clover, and the freeze of April killed all the young clover from seed this spring. No prospects for any white honey this season.—A. L. Kildow.

MILWAUKEE, WIS.—Dry weather last fall was hard on clover, but abundance of rain this spring makes probable a fair crop. Frost did not injure it. Estimate crop at 75 per cent of normal.—Chas. B. Blaker.

GEORGETOWN, ONT.—Recent clover injury slight, if any. Frost not serious. No real drouth. Only two very hot days; then general rains and cooler Sunday relieved situation. Not much surplus honey expected. Very little good weather for early bloom may leave colonies hungry in June, cutting down clover supplies.—Morley Pettit.

EAST LANSING, MICH.—Clover not injured by frost, but lack of rain is seriously affecting it now.—B. F. Kindig.

AMES, IOWA.—No clover injury reported or observed.—F. B. Paddock.

JANESVILLE, MINN.—Past 10 dry months rendered white clover plant scarce. Alsike good. Late frosts destroyed half basswood bloom.—E. L. Hofman.

KINDE, MICH.—Clover not injured with frost. Drouth broken May 23. It has been very dry but clover good.—David Running.

DR. PHILLIPS, BUREAU OF ENTOMOLOGY, DESIRES SAMPLES DISEASED OR ABNORMAL BEES.

The Bureau of Entomology desires to obtain samples of adult bees which appear to be affected with any of the known diseases, or which are in any way abnormal. Live bees in mailing cages are preferred, but dead bees in wooden or stout cardboard boxes will be useful. They should not be mailed in bottles or tin boxes. The name and address of the sender should be placed on each lot and the package mailed direct to Dr. E. F. Phillips, Bureau of Entomology, Washington, D. C. The results of the examination will be reported promptly by Dr. Phillips. The co-operation of beekeepers will be appreciated. (See editorial.)

BOOKS AND BULLETINS.

The Vitamine Content of Honey and Honey Comb, by Philip B. Hawk, Clarence A. Smith, and Olaf Bergeim, from the Laboratory of Physiological Chemistry of Jefferson Medical College, Philadelphia, has been reprinted from the American Journal of Physiology, Vol. IV, No. 3, April, 1921.

Mixed Infection in the Brood Diseases of Bees, by Arnold P. Sturtevant, Specialist in the Bacteriology of Bee Diseases, Bureau of Entomology, United States Department of Agriculture, has been reprinted from the Journal of Economic Entomology, Vol 14, February, 1921, No. 1.

Special Notices by A. I. Root.

THE HUBAM CLOVER THAT WINTERED OVER.

On page 374 I gave you a picture of a clump of this clover photographed May 9, when it was 11 inches tall. It is now, May 24, 27 inches high and spreading out sidewise, so it is about as far across as it is tall. Some of the plants that wintered over are budded to bloom, and give promise of honey for the bees, far in advance of the old biennial.

THE ELECTRIC WINDMILL DURING THE PAST WINTER.

On page 170, Gleanings for March, I mentioned the fact that we were having less wind during the past winter; and I finally suggested a very small gasoline engine to back up the windmill during an unusual period of no wind. Right after that was written, however, we had beautiful winds with scarcely a failure until we left our Florida home the last of April. The batteries were all kept well charged without any trouble, and a few times the windmills were stopped because we did not need the current.

I. F. MILLER'S STRAIN ITALIAN QUEEN BEES.

Northern bred for business; from my best SUPERIOR BREEDER (11 frames brood on April 7), gentle, roll honey in, hardy, winter well, not inclined to swarm, three-banded, 27 years' breeding experience. Satisfaction guaranteed. Safe arrival in U. S. and Canada. Untested, $1.50; 6, $8.00; 12, $14.00. Select, $1.75; 6, $9.00; 12, $17.00.

I. F. MILLER
Brookville, R. D. No. 2, Pa.

Buckeye Packed Hives	Queen Excluders
Bee Books	Queen Rearing Outfits
Bee Gloves	Honey Tanks
Section Honey Boxes	Standard Dovetailed Hives
Bee Veils	Honey Labels
Honey Extractors	Hive Parts
Feeders	Smokers
Bees	Comb Foundation, Airco Brand
Beginner's Outfits	Wax Presses
Gleanings in Bee Culture	Capping Melters
Frames	Queens

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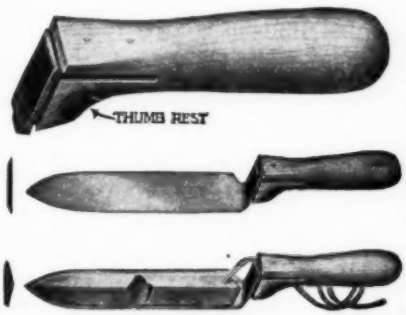
On the market over 40 years. The bellows of best quality sheepskin is provided with a valve, which gives it pep and makes it respond quickly to the most delicate touch, giving as much or as little smoke as is required. The Big Smoke size, stove 4 x 10 inches, with asbestos-lined shield, permits the holding of the smoker between the knees without danger of burning the trousers or one's legs. This size is much appreciated by extensive operators.

Postage extra.	Size of stove, ins.	Shipping wt., lbs.
Big Smoke, with shield	4 x10	3
Big Smoke, no shield	4 x10	3
Smoke Engine	4 x7	2¼
Doctor	3½x7	2
Conqueror	3 x7	1¾
Little Wonder	3 x5½	1½

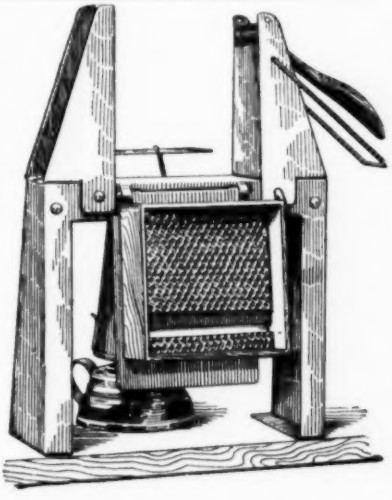


Buy Bingham Honey Uncapping Knives

Made of the finest quality steel for the purpose that money can buy. These knives of the proper thickness and quality have given the best of satisfaction, as the old timers will testify. For over thirty years the men engaged in the manufacture of these knives have been at this work. The perfect grip cold handle is one of the improvements.

Buy Woodman Section Fixer

A combined section press and foundation fastener of pressed steel construction. It forms comb-honey sections and puts in top and bottom starters all at one handling. Top and bottom starters insure combs attached to all four sides, a requirement to grade fancy. By using this machine you always handle large pieces of foundation. The difficulty of handling the small bottom starters is eliminated, which is not the case with other machines. The section comes away right side up, with the large starter hanging down, which is a decided advantage in rapid work, especially in hot weather.



SPECIAL SALE HONEY PACKAGES.

60-lb. cans, 2 in a case, per case in quantity lots, f. o. b. Chicago, at $1.30; Detroit, at $1.30; Baltimore, at $1.25. Friction-top pails, f. o. b. Chicago, 5-lb. size, crates of 100 at $7.75; crates of 203 at $15.00; 10-lb. size, crates of 113 at $12.50. F. o. b. Baltimore, 5-lb. size, crates of 100 at $7.50; 10-lb. size, crates of 100, at $11.00. Clear flint glass Mason jars with lacquered tin caps and wax liners, pints per gross at $9.00, quarts per gross at $10.00. Quotations on other packages made on request.

A. G. Woodman Co., Grand Rapids, Mich., U. S. A.

Dollars and Sense

"The Olympian," a transcontinental train, passes the window every morning at 7:55, rushing toward Chicago. Millions of dollars invested and hundreds of men are required to keep this train "On Time." None object to the fare if the schedule is met, for we **pay for Service.**

Mr. Beekeeper outside Wisconsin asks prompt and complete shipment of "Beeware" from his distributer. The investment of thousands of dollars and hundreds of men in woods, railroad, factory, and branch make this possible. National distribution is costly, but we willingly **pay for Service.**

Besides quality and workmanship, distribution is a part of the legitimate cost of "Beeware" to you. Thus better service is possible than a small organization can give. Don't take our word. Spend your Dollars and Sense. **A trial will convince you today.**

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GLEANINGS IN BEE CULTURE

JUNE, 1921

EDITORIAL

A Circuit of Conventions.

THE American Honey Producers' League thru one of its committees is endeavoring to arrange with the officers of various beekeepers' associations to hold their annual meetings on consecutive dates in adjacent States, thus arranging a circuit of meetings. Such an arrangement would enable one person to attend several conventions without excessive traveling expense, and would thus make it possible to secure speakers in many cases who would not be able to attend if a separate trip were necessary for each convention. It is to be hoped that the various associations will co-operate with the League committee in arranging for such circuits of meetings in various parts of the country.

Mixed Infection in the Brood Diseases of Bees.

IN a paper published in the Journal of Economic Entomology for February, A. P. Sturtevant, Specialist in the Bateriology of Bee Diseases, Bureau of Entomology, United States Department of Agriculture, discusses the subject of mixed infection in bee diseases.

Since the Bureau of Entomology began the examination of samples of brood diseases a total of 38 samples containing both American foul brood and European foul brood was received, 32 of which were received during 1919 and 1920, two in 1918, one in 1917, two in 1916, and one in 1911. It was formerly thought that mixed infection was of extremely rare occurrence, only one such sample having been found prior to 1916; but the number found during the past two seasons, when 32 out of 1391 samples examined contained both diseases, shows that mixed infection is by no means rare.

Of the total of 38 samples of mixed infection, 12 came from California and five from New York, the others coming from 11 widely separated States, chiefly from prominent beekeeping regions.

These are important facts for beekeepers located in regions where both diseases are imminent for when both diseases are in the same apiary and sometimes in the same colony, the problem of treatment becomes complicated. It is well known that if the shaking treatment used in treating American foul brood is given to colonies having European foul brood the trouble is often aggravated instead of being cured. When both diseases are found in the same apiary, and possibly in some cases in the same colony, Mr. Sturtevant recommends first the elimination of European foul brood by strengthening and requeening all the colonies with vigorous, young Italian queens, then treating any colonies which do not respond to this treatment as being American foul brood.

The Dr. Miller Memorial Fund.

AS INTIMATED in last issues of Gleanings and the American Bee Journal, the birthday of Dr. Miller, June 10, has been set aside as the date when we should, one and all, give expression in a practical way of our indebtedness to the great beekeeper and leader who has left us. Some letters that have come in expressing the writers' love for the man, accompanied with a remittance, almost bring tears to one's eyes. For example, a young girl, crippled for life, who in her earlier years had paid her way thru college with the money she had earned with her bees, sends a dollar. After she had gotten thru college a serious spinal trouble developed, with the result that she is confined to her bed much of the time, being able to get about with difficulty only by means of crutches. Of course her earning power is gone largely; but she has not forgotten Dr. Miller. She did it out of pure love.

Another incident comes to our mind of a young man who started with few bees, and with their help he is putting himself thru college. He has been a great lover of Dr. Miller and his writings; and even tho the dollars come hard during these strenuous times, and even tho their purchasing power is only about half their value during the pre-war days, this boy sends in five dollars.

Several have proposed to establish a professorship in apiculture in some college, a scholarship, a beekeeping library at some

apicultural school, or a monument with a suitable inscription, the same to stand over the last remains of him who left his charm and impress on the beekeeping world.

Unfortunately, there has been drive after drive to help the poor and the starving in Europe, in Armenia, and in China. There have been various war drives until the pockets of many of us have been drained almost dry. These were all worthy. If this Dr. Miller memorial fund could have been raised at any other time, it would have been better, of course. But the thought that the committee kept in view is not to ask for large sums, but a fund which the beekeepers of the world feel that they can give, large or small. No gift will be too small. So far subscriptions have been coming in in sums all the way from fifty cents to a dollar. If we can not establish the Dr. Miller chair of apiculture at some college, we can provide a library or a monument.

We hope, therefore, that those of our readers who have not contributed to the Miller memorial fund will take advantage of the opportunity to do so right now before you forget it, by sending in whatever amounts you feel you can afford to give. June 10 has been suggested as the day, and we hope, therefore, that the responses will be prompt and liberal.

The Isle of Wight Disease, Again.

IN OUR last issue, page 265, we referred to the fact that the cause of the Isle of Wight disease had been discovered by John Rennie, Phillip Bruce White, and Elsie J. Harvey. Since last issue we have taken time to go thru their paper very carefully. We regard it as one of the most valuable that has been put out during the present decade—valuable, of course, to our cousins in Great Britain where the disease is rampant, and valuable to us in America, because, knowing the cause, we can determine whether we have anything of the kind here, and how to treat it. From the reports we have received, we regard it as one of the most serious diseases of adult bees known to bee culture—yes, possibly even more serious than either of the brood diseases, bad as they are. While at present the Isle of Wight disease is confined entirely to Great Britain, there is no knowing when the scourge may visit us, altho it is to be hoped that repressive measures will prevent it from coming to our shores. Every beekeeper should know something of the cause; and for that reason we are endeavoring to give our readers, as far as our space will permit, a brief survey of the contents of this paper.

For many years the cause of this disease was unknown. In 1912 and 1913 it was believed that it was due to a protozoan, *Nosema apis*; and this view was held until 1920, when Drs. Rennie and White, and Elsie J. Harvey of Great Britain (particularly the last named), discovered that the primary cause was not due to a protozoan or a bacterium, but to a parasite or a mite, *Tarsonemus woodi*. This parasite, according to their paper, published in the Transactions of the Royal Society of Edinburgh, Vol. LII, Part 4, attacks the bees thru the breathing orifices. To quote exactly it "occupies a very restricted region in that part of the tracheal system which has its origin at the anterior thoracic spiracle. In a well-established case of infection it will be found that, extending inward from this spiracle on either side indifferently, parasites in all stages of development may be present in any part of this portion of the respiratory system, whilst the ill effects of their presence may be seen not only in the region of occupation but in the muscular tissue to which these extend. * * * The primary parasitic invasion takes place thru one or both of the first pair of spiracular orifices, and apparently thru these alone."

In speaking of bees obtained from Italy and elsewhere, Dr. Rennie says: "In all, several hundreds of bees were obtained from this source. These, along with others obtained direct from Italy were searched for the presence of *Tarsonemus*. The result of these examinations was that the bees were found entirely free from the parasite. The evidence is so far satisfactory that it may be accepted that *Tarsonemus* is not being introduced to this country in Italian bees. Smaller numbers of Dutch bees so imported have also yielded on examination a similar result. Bees in limited numbers have also been obtained from Switzerland and from North America, all of which were also free from this parasite." On the question of whether bees in England are more susceptible to this disease, Dr. Rennie says again:

"It has been suggested that British bees of the present time are of a deteriorated breed, and have lost resisting power, so that *Tarsonemus*, a relatively non-pathogenic parasite ordinarily, is able to breed excessively. My provisional answer is that other racial forms are relatively affected. For example, Egyptian, Dutch, Punic, and Italian bees can be readily infected, and in these *Tarsonemus* multiplies with disastrous results, as in British bees. But the question of the ability of a stock to survive a prolonged period of *Tarsonemus* infection is not a simple one. Amongst other factors it involves the question of relative fertility of particular queens, as well as that of individual tolerance of the parasite."

Provisionally it may be hoped that there is no disease of the kind here. The nearest to it that is found here is what is known as the disappearing disease. But this has one marked characteristic or symptom that is decidedly different from any found in the Isle of Wight disease. Colonies infected with the latter seldom recover with-

out treatment, and the disease continues on unabated unless there is an extra good queen, in which case she may supply new bees faster than the old bees die off. In the case of the disappearing disease of this country, so far as known, the malady or disease or whatever it is, never lasts more than 10 days, at the end of which time the trouble disappears—hence the name, disappearing disease.

It appears that the parasite, *Tarsonemus woodi*, may be found in apparently perfectly normal or healthy bees. Bees carrying the mites will go to the fields and apparently function as well as bees that are healthy or without the mite; but, as the parasite begins to develop, the first symptom of their host or victim will be its inability to fly, altho it may appear to be perfectly normal in all other respects. After a time it joins other affected bees out in front of the entrance of the hive, there to die. The disease, therefor, is insidious in that a beekeeper may have it and not know it until in the later stages he finds evidence showing disjointed wings and many bees crawling around in front of the entrance. It is rather remarkable, even where only one or two of the first pair of spiracles may be affected, that paralysis of one or both of the wing muscles takes place. Apparently the perfect functioning of the first pair of tracheae is necessary in order to insure a normal flight on the part of the bees.

That the closing of the spiracles from any cause has a direct influence on the wings is proved by the fact that the same effect is produced by using any other means of closing these openings, such as warm paraffin. Experiments by Rennie have shown that, when these orifices are closed with paraffin, flight is made impossible almost immediately, altho the bee seems to be perfectly normal in all other respects, and may continue so for several weeks at a time. The fact that it can not fly, however, soon results in the clogging of the intestinal passage. This was what gave rise to the belief that the disease or malady was due to a protozoan or bacterium in the intestines. Bees normally will not discharge their feces except in flight.

In this country beekeepers will often find in the apiary crawling bees unable to fly. Such bees are not infrequently found at the beginning of a honey flow or during a temporary attack of disappearing disease. While it is possible that the parasite may be in this country, the presumption is rather in favor of the supposition that some foreign substances—possibly some dirt or pollen grains—have closed the first pair of spiracles, thus bringing on paralysis of the wings. Until more definite proof is furnished, this can be only a surmise or a guess. Until then the beekeepers of the United States should send all cases of bee paralysis, disappearing disease, and all bees around the entrance that are unable to fly, to Dr. E. F. Phillips of the Bureau of Entomology, Washington, D. C. It is highly important that all such be examined at once.

In the mean time the hope has been entertained in this country that the Isle of Wight disease can not thrive here. The climatic conditions in this country are so different from those in Great Britain that a disease that might thrive in a damp or humid atmosphere might find it difficult to get a foothold here. The last quotation given above would seem to indicate that the hope is not well founded, because the authorities state that other races of bees can be readily infected with the parasite The work done by Rennie, White, and Harvey in finally locating the cause of the Isle of Wight disease is invaluable. But the one first to discover *Tarsonemus* in the tracheae of honeybees was Elsie J. Harvey. This is not the first time that a woman has come forward with some great discovery. The knowledge of the cause of the disease may now suggest a cure.

Suggested Cure for Isle of Wight Disease.

It has been found that *Tarsonemus woodi* affects mainly the old or field bees. It is seldom found on young bees. Whether the mite or parasite lodges in the blossoms that have been infested by other bees is not yet shown; but, in the absence of any evidence to the contrary, it may be inferred that flying bees going to a neighboring hive by mistake might carry the parasite from colony to colony. One would naturally expect, as in the case of foul brood, that the hives near the one infected, with the entrances in the same direction, would soon have the parasite. It would also be inferred that the pests would be carried thru the agency of robbing. It might also be transmitted thru hives and appliances.

Nothing in the report by Rennie, White, and Harvey gives a treatment or cure for the Isle of Wight disease; but it has been suggested in the British Bee Journal that traps might be used to catch the incoming bees of colonies badly infected, and then giving young vigorous queens so that the new young blood would take the place of the old. If all the bees carrying the parasite could be trapped out there would be a possible chance that their successors might be freed from the parasite.

In the Bee World (British) reports have shown that the destruction of all bees in colonies affected with Isle of Wight disease, and putting the brood and the queen in an incubator until most of the brood emerges, effects a cure. As only the adults are affected, especially the flying bees, this looks reasonable and in entire harmony with the facts regarding the now known cause. It is to be hoped that this cure will be absolute. If so, it will be no more difficult to apply than the cure for American foul brood, based on the same principle of the removal of the infected material.

THE PREVENTION OF SWARMING

Importance of Comfort and Contentment of the Bees. The Swarming Problem a Blessing in Disguise

By Morley Pettit

OUR first step towards the prevention of swarming is to enlarge the entrances of the winter cases when the bees begin to cluster down in the bridges in early April. The next is to add a super of number-one brood-combs without the queen-excluder as soon as the original brood-chamber is well filled with bees, on a day too cool for bees to fly. We do not wait for the combs to be filled with brood and honey. This is the last of April or early in May, and the fact that all are still protected by winter cases allows us to super more liberally without fear of changeable weather. The extra combs given at this time should all be dark; but, if such are limited, there may be dark ones in the middle of the super and light ones at the outside. The queen generally goes up into these quite readily and starts a new brood-nest. Possibly the fact that conditions are similar to those of a newly hived swarm tends to a state of greater contentment. At any rate, if she has ability she develops her new quarters upstairs with great vigor, and we are saved the swarm of bees in May for which we would not trade a good-sized forkful of hay. If the ancient poet had said that a good strong colony in May is worth a load of hay, and to prevent swarming in June is worth a whole cabinet of silverware, he might have been guilty of "*vers libre*," but he would have taught good bee-keeping.

Extra Supers Given Early.

We often get a honey flow early in May that would drive the queen down again by filling her new brood-chamber with honey, if we did not add an excluder and an extracting super on top of the double brood-chamber. Again, we do not wait for a crowded condition, but keep on supering as long as the colony has bees to go in and *sit on the combs* if nothing else. We try to forestall any clustering out. Contentment in the hive is the keyword to swarm prevention, and the secret of this is room for brood, stores, *and bees*. The first two are often stressed in articles on this subject, but seldom the latter. There should be space inside for all hands to go in, even when it rains, and ventilation so they *will* go in when it is hot. Usually by the time the queen has had her upstairs apartment for three weeks or four at the outside, she has forgotten the old one downstairs and it is time to ask her to move down again. If we neglect this, the lower set of combs is ruined with an excess of pollen. We cannot wait for the beginning of the clover flow as is so often advised. As a matter of fact we find something profitable to do to each colony almost every eight to ten days from the time queen-clipping starts — the last week in April, if the season is early as it is this year, till it is all over in the fall. And we find that it gives best results to super as the colony develops to prevent crowding or clustering out, regardless of the filling of the supers, until we know definitely that the flow is over or nearly so. In every case the fresh super is placed next to the brood-chamber.

Now if supering is attended to as I have tried to indicate, and *a little in advance of the need in each case*; and if the queen has been allowed to "swarm" upstairs to a nice set of dark worker combs and then placed downstairs on her old combs while they are still in the best of condition, and before the brood has all emerged from them, we feel that we have done all that the colony can reasonably expect of us to make them contented in the old home. Besides giving ample clustering and storing space we have twice given brood-chamber conditions which resemble, to some extent, those of a freshly hived swarm.

The second time, the brood is hoisted to the top of the hive. On the next visit this brood is in prime condition to make nuclei for queen-rearing and increase. If not needed for either, it stays right there to add its bees to the colony and then be used for honey storage. Have you a sentiment against using brood-combs for honey? Our customers have none. And they buy from us year after year. And what about the queen-cells? We use some of the best of them for nuclei when we know the stock is good, and destroy the others. Perhaps we could safely neglect them, but we hate to take the chance.

Keep Colonies Contented.

I have outlined above our method of preventing swarming. It is a method which is effectual in the majority of cases. To disrupt violently the colony organization is as repugnant to us as we feel it is to the bees. It is to be resorted to only in extreme cases, and in our system is seldom worse than that of leaving a full colony queenless from one visit to the next. With all deference to successful beekeepers who practice such things, I would liken the system of treating a whole yard at once to rapine and violence like "shooking" or "Demareeing," to a surgeon who would amputate the right leg of every patient in a large hospital because some of them needed such treatment and others might.

We go thru our colonies every six to eight or nine days. This periodical examination serves a number of purposes and has a bearing on the prevention of swarming. By means of it supering is attended to, and

the queen is kept supplied with empty cells for her eggs. If the brood-chamber becomes crowded, it is necessary to remove, first, combs of honey; then combs of the ripest brood to make room for an empty comb or two. But to say that we "prevent swarming by raising combs of brood into the super" as some have said, is to grasp for a rule where a rule is unwise if not impossible, and miss the spirit of the system. When we find that queen-cells have been built we destroy them; but to speak of preventing swarming by "cutting out the queen-cells" is to miss the point entirely, for the sort of practice which that implies is nothing but locking the stable after the horse is stolen. Perhaps it is not quite so bad, and a balky horse may be better than none at all.

Treatment for Balky Colonies.

Unfortunately we do have some balky horses—I mean sulky colonies, and that is the bearing that the periodical examination of the brood-chambers has on the prevention of swarming. To go back a step, we start queen-rearing operations as early as possible in the summer, so as to have a batch of young laying queens in nuclei in each yard. This most important part of the season's operations belongs exclusively to Miss R. B. Pettit, and I shall not attempt to go into details, further than to say that I sincerely hope that we shall never be subjected again to the necessity of having our queens come to us thru the mails. When on the weekly round colonies are found with eggs in queen-cells we consider that the impulse to swarm is still insipid, and that perhaps supering or ventilation has been neglected. We destroy all cells that have eggs and care for the other conditions, and give the hive a special mark. Next trip, if cells with eggs only are again found, we may again destroy them and attend to other conditions, and again mark and leave the hive, provided the queen is doing well and the general morale seems good. Where cells with more than eggs are found after we have done our part by supplying room and ventilation we blame the queen. Either she transmits to her progeny by heredity a swarming tendency, or she is failing and needs to be superseded. She is removed from the hive and a young laying queen is introduced in her place after the colony has built cells for about eight days. That requeens the colony and settles its swarming notions for another year. It was from P. H. Elwood of New York State that I first got the idea of checking a persistent swarming impulse by taking out the queen, and we have adopted his name for the nucleus we make to give her work, and call it a "take out." A "take-out" readily grows into a colony for increase, and can be requeened later when there are young queens to spare at the end of the season.

Before the brood has all emerged in the lower story the queen is put below the excluder.

I have tried to present the matter of swarm prevention, shorn of manipulation trimmings, as it appears to me, and may be pardoned for going over the ground once again. In our "locality" the swarming impulse is the beekeeper's greatest enemy. The control of disease and winter conditions are child's play compared with it. Yet, like all other enemies in agriculture, it is a blessing in disguise. It compels us to give our colonies careful attention. We fight this enemy on two fronts, selection in breeding, and manipulation. While selecting less-swarming strains we also select honey-gathering strains and those that carry their honey upstairs instead of crowding the queen. The ventilation and method of supering which help to control swarming by promoting colony morale

stimulate honey-gathering and increase the crop. The new brood-chamber twice given in the early part of the season increases brood-rearing at the most important time. Every time we look over the brood-combs to see whether our swarm-prevention methods are successful we have a chance to detect disease on the start, and we study the behavior of each queen so as to replace her when she begins to fail. This seems more satisfactory than to attempt a wholesale requeening of every colony at a certain time whether it needs it or not.

It would be an ideal condition if all the colonies in an apiary were as uniform as the hives. Then the expert could go to an apiary, examine one hive and instruct his helpers to give certain treatment to them all. If all the queens were of the same age and parentage and the colonies came thru the winter of uniform strength, this might be wisely done. Such uniformity is something to strive for, but until it can be obtained we find it profitable to consider each colony a separate patient, and the expert, the physician to diagnose and prescribe. Even leaving a colony without a queen for a week or so is injurious, but we do not think it does so much harm as some of the ripping-up methods advised for every colony whether it needs them or not. When by care most of the colonies can be brought thru the season with no more serious "operation" than a change of queens, without any queenless period, the increased profit more than pays for any extra trouble.

The Building of Combs.

I think it was Arthur Miller who said in The American Bee Journal with reference to numerous methods of wiring frames, "It's too bad, boys, to spoil all your fun, but just use heavier wire." I would add to that, use heavier foundation. Where we have the wax to use, we have it made six or seven sheets to the pound instead of the regulation eight. We do not fasten it to the top-bar. An extra horizontal wire one-quarter inch below the top-bar, supported in the middle by a staple, holds up the top edge until the *bees* fasten it. That is the first thing they do, if the frame of foundation is given them under right conditions, and they can do it while we are doing something else.

We never put foundation in a brood-chamber—that is, where you get it cut away from the bottom-bar. It should almost touch the ends of frames and come so near the bottom-bar that it will be built fast, yet not close enough to buckle out and spoil the lower part of the comb. If sheets of foundation properly fitting the frames and well fastened to the wires by proper imbedding are given to colonies under right conditions, good combs will result.

Our supering works out about like this: First, the extra brood-chamber of worker combs; next, a set of number-two combs. These are combs built on foundation but spoiled for brood-rearing by stretching or buckling. After combs of all descriptions, built on foundation, have been used, supers of foundation are put on next. Sometimes we put down a few partly filled combs into the super, which is going on, to help make a connection between the brood-chamber and the super work—that is, when it is empty combs going on. When colonies are rousing strong and the flow is good we do not consider this of much importance, and seldom mix combs with foundation. They bulge the combs over against the foundation to the disadvantage of both. When a colony, having three or four Langstroth supers of combs nearly full of green honey, is given a super of foundation between them and the brood-chamber, it fills up almost as rapidly as tho it were of drawn combs, provided the flow is still strong. If not, the foundation will be drawn out at least enough to pass for comb next season, and the ripening of the honey above will be hastened. So, with combs enough to hold two-thirds of the crop and tide the colonies over the most critical time for the swarming impulse, supers of foundation for the rest of the honey flow are rather an advantage all around. We like to reserve all drone combs to give room when taking off the crop.

Georgetown, Ont.

One of Morley Pettit's out apiaries well protected from prevailing winds.

THE DR. MILLER OF THE SOUTH

An All-around Genius; a Pioneer in the Successful Use of an Extractor Reversing on a Central Pivot

By E. R. Root

I HAVE said several times that there was only one Dr. Miller in the world, and that there would never be another one; and while that statement is literally correct, if there is any man in the whole Southland who has in him some of the delightful personalities of the sage of Marengo, it is T. W. Livingston, Norman Park, Ga. He is comparatively unknown to the beekeeping world; but one can not

T. W. Livingston the Dr. Miller of the Southland. While he does not look like Dr. Miller, yet in age, experience, and actual knowledge of bees, he is very much like him; and on top of it all he has Dr. Miller's loving mannerism.

be in contact with him very long without being impressed that here is a beekeeper of more than average intelligence. Almost as old as Dr. Miller, he has a lovable mannerism and a knowledge of bees and bee behavior that is seldom surpassed. No, he is not quite like Dr. Miller, in that he is not given to playful jokes; but he is *like* him because he is so likable, and knows so much that 's worth knowing.

Mr. Livingston is somewhat like another doctor well known in beedom. I refer to Dr. G. L. Tinker, an inventor and mechanic. If you could take Dr. Miller and Dr. Tinker and make a combination of the two you would have Livingston. A short time ago I wrote him in a letter that he reminded me of Dr. Miller. He came back with the statement, "I do not think myself worthy to be called the Dr. Miller of the South." That is Mr. Livingston all over. He is very modest—extremely so—and that is why we have not heard more of him.

But why is he like Dr. Tinker? If you could go thru his workshop you would see that he is a fine mechanic; and not only that, he could have become a mechanical engineer, and a first-class one, had he qualified for that in his younger days. I will explain later why I think so.

Mr. Livingston is a northern man who went south. He has been keeping bees in a modest way both north and south, and, like many another genius, he has studied his locality most thoroly, so that he probably knows more about Southland conditions than many men who have lived there all their lives. For example, his knowledge of honey plants, for one who does not pretend to be a botanist, is remarkable. He not only can give instanter the English but the Latin names of all the important honey plants in the South. As our readers know, we have in preparation quite an extensive volume, "The Honey-bearing Plants of North America," by Lovell. Naturally enough I was pleased to find a man who could assist Mr. Lovell.

Central-Pivot Reversible Extractor.

But the thing that, perhaps, interested me more, and the thing that caused me to visit Mr. Livingston in the first place, was his four-frame central-pivot reversible honey-extractor. Some 12 years ago, in considering the two plans of reversing the combs in the extractor he decided on the type of machine that is now coming rapidly to the front; and during all these years our friend has been using this extractor—the same model that he made at first. It is light, portable, and stands service. The scheme of reversing the pockets is original with him, and quite unique. One would almost think it had been worked out by a trained mechanical engineer. In any event it would take a mechanic to make it. Had

This is a top view of Livingston's central-pivot four-frame reversible honey-extractor. Livingston was ahead of his time in deciding that this principle is correct. The reversing is accomplishing by means of a chain around each basket, communicating with a planetary-gear system surrounding the shaft. Mr. Livingston has used this for 12 years with complete satisfaction.

Livingston not been of the type of Dr. Tinker, he could never have built it in his own workshop. But he did. Unfortunately the principle does not lend itself to the use of power eight-frame extractors without adding complications. But it works on four-frame hand machines admirably.

Livingston's portable extracting outfit, all of it on a common Ford. It consists of a four-frame reversible extractor, uncapping outfit, and a takedownable wire-screen building. The whole thing can be put into operation in the space of a few minutes.

Mr. Livingston runs a series of outyards, using this extractor in all of them. When he goes to an outyard to extract he takes along not only his extractor but his portable takedownable extracting-house, made up of a series of wire-screen panels, all on a common Ford. On arriving at the yard it takes him only a short time to unlimber, set up his house, and begin extracting. At the end of his day's operations he takes down the whole outfit and loads it on his Ford as shown in the illustration, when he is ready to go home. The next day he is ready for another yard, and so on he goes thru all of his extracting. J. J. Wilder says that a central extracting station using power to drive the extractor is not practicable for this part of the South, and so Mr. Livingston is in line with the practice of the South.

He has worked out a system of management that enables him to accomplish a maximum of work with a minimum of labor and capital. For a man of his years he is able to accomplish an immense amount of work. He makes all his own supplies and some for his neighbors; and with the help of his son-in-law, who is associated with him, he is able to do quite a business in the production of honey.

In this connection perhaps I should acknowledge that both J. J. Wilder, who is located some 40 miles from Mr. Livingston, and Mr. Livingston himself, have called my attention to the fact that a mistake was made in Fig. 7, page 209 of April Gleanings. This is not the titi that yields what is commonly called the titi honey of the Southland. While it is a titi, and occasionally yields a little honey at times, it is not the titi of the Southland that interests beekeepers.

COMB HONEY PRODUCTION

The Spirit of the Hive. How to Increase the Crop by Speeeding up the Workers

By George S. Demuth

BY using forehanded methods previous to the honey flow, especially in reference to providing the bees with an abundance of stores to insure the greatest amount of brood-rearing during the six or eight weeks just preceding the honey flow, together with an abundance of room in the form of worker brood combs to prevent the beginning of any stagnation or discontent which might cause the bees to prepare to swarm, the colonies usually go ahead full speed doing exactly what the beekeeper desires they should do. When these two conditions have been provided, but little else need be done for the bees at this time, except such work as clipping queens and looking for disease, if disease is imminent. In other words most of the work previous to the honey flow can be done "by rule of thumb methods" and the needed attention can be given far in advance.

At the beginning of the honey flow the reverse of this condition is usually true, for the beekeeper must now be constantly on the job ready for any emergency if he expects to harvest a full crop of honey. Many things can happen during the honey flow to prevent the colonies from doing all that they are capable of doing in gathering and storing honey, especially in comb-honey production. Except when the greatest skill is used in the management during the honey flow a large percentage of the colonies will fall behind in the race, leaving only a few fortunate ones which have really done what they could. At the close of the season these few colonies, sometimes giving a yield double the average for the apiary, become witnesses bearing testimony as to the high cost of even some of the slightest mistakes in management.

After having provided conditions by which a great army of "harvest hands" are now ready, and others soon to be ready for the harvest, which in most localities

suitable for comb-honey production is short in duration, the beekeeper should now get out of these workers every ounce of energy he can induce them to surrender for his profit. If anyone should have any sentiment against doing this, let him remember that the bees apparently are happiest when working the harvest. Let us increase their happiness.

Visible and Invisible Loafing.

Comb-honey producers are well acquainted with the tendency of bees to loaf, even during a good honey flow when conditions are not the most favorable. Sometimes the most trifling adverse condition upsets the spirit for work and brings visible loafing. At other times the loafing is less in degree and may not be noticed by the beekeeper. In either case it means a loss. Loafing, whether visible or invisible, usually increases until the cause is removed, and sometimes for a long time afterward. For this reason the prevention of even the slightest tendency to loaf during the honey flow is really one of the biggest problems with which a comb-honey producer has to deal. For, if this can be accomplished, serious loafing can be prevented and swarming can be greatly reduced. During some seasons most of the colonies that prepare to swarm could have been induced by better management to work energetically thruout the season without a thought of swarming.

Conditions Reducing Colony Morale.

Some strains of bees are more inclined to loaf than others. Old bees usually work less vigorously than younger bees, and colonies having old and failing queens usually work with less energy than colonies having vigorous queens. Queenless colonies, especially those hopelessly queenless, usually work with less vigor than queen-right colonies. It is well known that anything which causes discomfort to the bees within the hive, such as heat, lack of ventilation, or lack of room, may start loafing. Insufficient room for ripening and storing the incoming nectar or conditions suggesting a completion of the season's work, such as sealing honey down adjacent to the brood, as is normal at the close of the season, are strong factors in causing bees to loaf. Any conditions within the hive which in any way tend to check the freest expansion of the hive work, apparently checks the work of the field force almost immediately, and when the field workers begin to remain in the hive during the day in increasing numbers visible loafing is soon brought about. Colonies which surround the brood-nest with a rim of honey and confine their work to the brood-chamber, as at the close of the season, usually loaf badly. In fact, those conditions which were mentioned last month as bringing on a tendency to swarm, are the very ones which bring on a tendency to loaf. Even the destruction of queen-cells, in the attempt to induce a colony to give up swarming, often results in a bad case of loafing, except possibly when this is done soon after the queen-cells were started. When the beekeeper by force prevents the bees from carrying out their program in swarming after it has once been started, the bees often retaliate by loafing. Thus when bees and beekeeper work in opposite directions, the bees, not being permitted to have their own way, may take it out in sullen loafing in the midst of a good honey flow. In some things they can be led, but not driven.

Conditions Increasing Colony Morale.

It is not enough merely to prevent the tendency to loaf, but the workers should be stimulated to do their utmost while the honey flow lasts. Each of the field workers could surely make more than four or five trips for nectar during a day, which is about their usual average day's work.

Any condition which speeds up the work within the hive, especially by inducing the younger bees to leave the brood-nest to go to the supers earlier in their lives, tends to speed up the work of the field bees. The ideal condition for best work is that of providing a job for all of the bees which stay within the hive as soon as they are old enough for inside work. This is the condition in a newly hived swarm. Reducing the number of idle hive workers apparently speeds up the work of the field bees.

Beekeepers have long been familiar with the energetic work of a newly hived swarm, or of a colony just beginning a new job, such as preparing a set of newly added extracting combs for incoming nectar, especially when these combs are placed adjacent to the brood with but little if any honey between. If the stimulus resulting from the beginning of a new job could be sustained thruout the honey flow, no doubt the field workers would each carry in six or eight loads of nectar per day instead of four, thus increasing the crop of honey in proportion. This is exactly what the skillful beekeeper attempts to do, and the extent to which he is able to keep his bees contented and to stimulate them to put forth greater effort determines to a large extent the amount of honey he can produce with the working force which is available during the honey flow. By skillful management during this time the beekeeper is able to secure yields of honey probably never equaled by colonies of equal strength in their natural state, and certainly never equaled by colonies that are neglected.

Effect of Skillful Supering.

After the honey flow has begun, a stagnation of colony activity must be prevented and the stimulus of new work must come, to a large extent, thru the management of the supers. This is where the production of extracted honey by giving empty combs adjacent to the brood, offering a new job for the bees again and again as more room is

needed during the honey flow, gives the producer of extracted honey a great advantage. The nearer a comb-honey producer can approximate these conditions, the nearer will his yield approach that of the extracted-honey producer.

Fig. 1.—A prompt beginning in the first super is important.

In comb-honey production much can be done to entice the multitude of oncoming younger bees out of the brood-chamber early in their lives by giving them work in comfortable and attractive supers. The drawing out of full sheets of fresh foundation, the building of new comb, and the ripening and moving about of the raw nectar when carried on extensively by the hive workers, apparently all tend to stimulate the field force to bring home more loads of nectar during the day. At the same time the absence of the field force from the hive during the heat of the day must add greatly to the comfort of the bees within the hive, thus facilitating their work and increasing the spirit for work in the entire colony.

A prompt beginning in the first supers is extremely important in tiding a colony over this critical period. The colonies should be strong enough when the first supers are given to send a force of comb-builders into these supers large enough to fill them with bees. The brood-chamber should be almost completely filled with brood to the top-bars, so that there will be no rim of honey between. It is better if the foundation is fresh, so the bees will draw it out thruout the entire super before these newly made cells are really needed for the storage of nectar. When conditions are less favorable at least one bait comb should be used in the first super. When two-story colonies are reduced to a single story at the time of putting on the first comb-honey super, it is sometimes best to give each of these strong colonies two supers at the same time.

Effect of Crowding from Supers Back into Brood-Chamber.

After work is begun in the first super, if no other supers are given until the combs are built out, it should be noted that the space in the supers that can be occupied by bees is being reduced as the combs are drawn out, until finally there is only about one-fourth of an inch left between the comb and the separator, so that most of the bees are crowded out and must go back into the brood-chamber. This is almost sure to cause the colony to work less vigorously. The same thing happens if the bees are driven from the super because it is too hot or because the hive is not well ventilated. If the colony is strong enough to draw out the foundation uniformly in all of the sections, and the honey flow is promising, a second super should be given, even tho but little honey is stored in the first one.

In order to induce additional comb-builders to go up into the supers, this second super may be placed below the first one. If conditions are favorable, the foundation in the second super will be drawn out within a few days and these shallow cells can be used for the evaporation of the incoming nectar. The bees apparently enjoy spreading out the raw nectar, a little in each cell, thus hastening its ripening by increasing the surface of the nectar exposed to the air. Before much honey has been stored in the second super it may in turn be raised up and a third super given. This operation may be repeated as often as necessary to keep the bees busy drawing out foundation and to attract more and more of the younger bees from the brood-chamber into the supers. In order to hasten the completion of the first super that was given it may be placed immediately above the super in which the bees are drawing out foundation, while the other supers are arranged above it in the order that they were put on the hive, the one in which the least work has been done being placed on top.

If it were possible to foretell the number of supers that each colony would finish during the honey flow, it would be well to induce the bees to draw out the foundation and begin comb-building in that many supers as early in the honey flow as possible, then give an extra one to be placed on top as soon as the foundation is completely drawn, the purpose of this extra super being to contain the overflow of nectar during the process of ripening. This extra super, having served as an evaporating chamber this season, can then be taken off before the combs and sections become soiled with propolis and be given as the first super next year.

Fig 2.—Second super placed below the first.

When the New Super Should Be Added on Top.

Colonies that are not strong enough to send a large force of comb-builders into the first supers should not have their super room expanded so rapidly. A good rule to follow is to place the new super under those in which work has been started, provided the colony is strong enough, and the honey flow is good enough to cause the bees to draw out the foundation uniformly thruout the super. If they draw out only those in the middle of the super, the second super

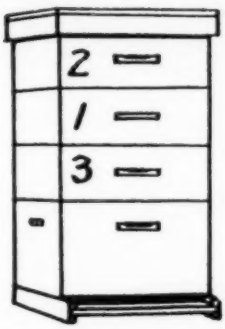


Fig. 3.—Third super placed below and first just above it.

should be placed on top at first, and no super should be raised up and another put under it until the foundation has been completely drawn in all of the sections. If the honey flow is slow or if the nectar is thicker when first gathered, the work of drawing out the foundation, comb-building, the ripening of nectar, and sealing the honey may all be done in a single super. In this case the newly added super should be placed on top.

The thing to keep in mind when adding supers is to avoid, on the one hand, too many unfinished sections by giving additional room too fast; and to avoid, on the other hand, the lack of stimulation which comes from newly added room for new work and an abundance of comb surface for ripening nectar. The surplus apartment, whether made up of one super or half a dozen supers, should have some fresh foundation being drawn until near the close of the honey flow. Rapid expansion of super work should take place during the early part of the honey flow, while during the latter part of the honey flow the super work should be concentrated.

During hot weather added ventilation may be given by pushing the first super forward on the brood-chamber about an inch. This will form an opening at the back of the hive just above the ends of the top-bars of the brood-frames. Such openings should not be made between the supers, since the bees may fail to finish the sections nearest such openings.

The beekeeper who by skillful supering is able to entice most of the rapidly oncoming younger bees into the supers early in their lives, and who keeps his colonies comfortable at all times, thereby increases his crop. With most of the younger bees in the supers and most of the older bees in the fields during the heat of the day, it would seem that each of field workers should make six or eight trips for nectar during the day instead of four.

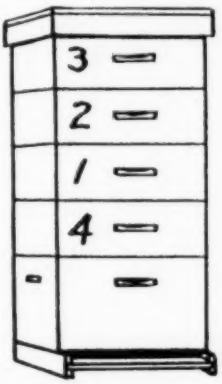


Fig. 4.—First super left in same position until finished.

CLASSIFYING THE QUEENS

Why Queen Breeders List Different Grades of Untested Queens. Variation in Tested Queens

By H. D. Murry

SOME confusion seems to exist in the minds of beekeepers about the proper classification of queens — especially the untested queens. In the January issue of Gleanings in Bee Culture, page 44, George W. Moore says: "Many queen-breeders have lost my trade by listing two kinds of untested queens—the good and the bad." Since I read that quotation, I have had a letter from a friend, whom I know to be a well-informed beeman, expressing the same idea. As well informed as we all know the late Dr. Miller to have been, I recall more than one reference to this subject, and he admitted that the matter was not clear to his mind. I do not recall that any queen-breeder has ever attempted to make the matter clear. Perhaps they may be afraid to stir the matter up, as it may lead to more controversy than the best and busiest queen-breeders have time for. As I am, at least temporarily, out of the list of advertisers of queens, I am going to make the attempt. I have no ax to grind and nothing to lose.

Paying for good Looks.

The confusion seems to arise from the fact that the average beekeeper has *only* two kinds of untested queens in mind, untested and select untested, while the up-to-date queen-breeder recognizes three kinds, as they first appear in his queen-yard—untested, select untested, and culls. The culls get their heads pinched off, and, as he is not selling that kind, he does not list them in his advertisement.

Eliminating the culls, there remain the untested queens to classify. This is merely a matter of choice, and two queen-breeders might not make the same classification of the queens. One may be governed by what he believes to be the inclination of the average customer. For instance, there has been a tendency among beekeepers to keep the yellowest bees they could get. If the queen-breeder is catering to this ten-

dency, he selects the yellowest queens to send out as select untested. If he is paying little or no attention to color, he merely selects the queens that present the best appearance, according to his idea as to what a perfect queen should look like. So it just comes down to the fact that the man who buys select untested queens is paying mostly for looks. The queens selected are not necessarily any better to head a colony run for honey than the ordinary untested queens. If the queen-breeder sold only the select untested queens and pinched off the heads of all the balance, it would make the price of queens prohibitive. For instance, suppose the queen-breeder has an order for six select untested queens. He goes into his queen-yard and out of a lot of probably 30 untested queens he selects six that come the nearest to looking like his ideal of a queen. Now, suppose he is selling untested queens at $2.00 each, and select untested at $2.25 each. By selling six at $2.25 each, $13.50, and the other 24 at $2.00 each, or $48.00, he realizes $61.50 for the lot of 30 queens. If he is always to kill all but the select queens, he must get as much for the six select queens as he should have realized for the 30 queens, or go out of the business of raising queens. I know that some queen-breeders claim they raise only select queens, but they will have to show me before I am convinced.

Classifying Tested Queens.

Passing on to tested queens, we find somewhat the same state of affairs. Suppose we examine a number of colonies and see what we find. We open the first hive and find the bees show three yellow bands. We decide at once that the queen is a purely mated Italian. Looking more closely we find many bees that do not show *all* the characteristic markings of the Italians. The third band is not very clear on some of them and some of the bees are small. The brood in the combs is not packed in closely, many cells remaining vacant. The force of bees seems to be running down, and, if the main harvest is on, they are not doing good work in the super. While this is a tested queen, she is not good, and we mark her hive for requeening at the first opportunity. She is a cull that has gotten by in introducing, or she may be an old and failing queen. In any event, she is not to be sold to anybody at any price.

The next hive opened shows the bees with all the characteristic markings of their race, the yellow bands about the same width on nearly all the bees. The combs are fairly well filled with brood, evenly placed, but showing a few vacant cells here and there. The colony is in a thrifty condition, and the prospect is that we shall get a fair average crop of surplus from it. Upon examining the queen, she may or may not show all the characteristic markings of the pure Italian. She may be a little off color, or possibly a little under the size of our ideal queen. But her work shows that she is a valuable queen to head a colony run for honey, so we may ship her out as a tested queen.

Select Tested Queens and Breeders.

The next hive opened shows bees with all the characteristic markings of their race. They are apparently of good size, and even color. The brood is closely packed in the combs, hardly a cell being left vacant, and the general condition of the colony shows they are prospering. The queen is large and fine looking, with all the characteristic markings of her race. The colony really may not be any more prosperous, or give promise of any better results in the super than the last colony examined; but on account of the better appearance of the queen, she is placed in the class from which breeders are selected, and we call her a select tested queen. Breeding queens are merely select tested queens that have been tried out as breeders and found satisfactory.

I hope I have made the matter clear. I am sure every conscientious queen-breeder will pretty nearly agree with me. If I have succeeded in making it clear to every one, we shall probably hear less about beheading all but one class of queens, for there really are two classes of both untested and tested queens; and the conscientious queen-breeder is trying his best to give each customer value received on every order, according to the class of queens ordered.

Callallen, Tex.

SIMPLIFIED QUEEN REARING

How Good Queens Can be Produced Even by Beginners

It is generally conceded that the commercial honey-producer should rear a part or all of his own queens. Many small beekeepers, however, do not believe it will pay to go to all the trouble to rear the few queens they need, preferring to let the bees do it. Now the beginner, if he is the enthusiastic amateur that he should be, is in the bee business for one of two reasons: he is in it for the love of the thing, or for the honey he expects to get. In either case he has a strong desire to learn the bee business, and he should remember that if he would understand bees he must study the queen. If one keeps bees for the pleasure derived from it, certain it is that the pleasure may be increased many-fold by studying and rearing queens. What greater delight can the amateur experience than to behold a beautiful queen all his own rearing. Dr. Miller used to say, "Every one thinks the most of his own baby." This is doubly true if that "baby" be a queen.

The beginner who has but half a dozen colonies may not find it advisable to learn the grafting method unless he expects to keep more bees in the future. If that is the case, the sooner he begins to practice with the grafting method the better. However, there are many principles running thru all methods of queen-rearing that are similar; consequently if we learn one method, it will help us the better to learn another.

It is a well-known fact that queen-rearing during the swarming period is a very simple matter compared with rearing queens during a dearth of pasture. The swarming period is the time that the colonies are in prime condition for queen-rearing. It is this condition of the colonies that makes for success at queen-rearing, and not the fact that the bees have the swarming fever. I have found that if the conditions within the hive are made right, every bit as good results can be had in a colony that is not preparing to swarm as in one that is preparing to swarm. What are these conditions? The colony must be strong in bees, there must be a large proportion of young bees to act as nurses, there must be some surplus honey in the hive, there must be a large amount of brood in all stages, and there must be both nectar and pollen coming in from the fields. These conditions are right for swarming, and they are also right for rearing queens. The beginner should tackle the queen-rearing job when the conditions are the most favorable; so he should begin as soon in the spring as the colonies are in the condition described.

If the queen is removed from such a colony, the bees will construct queen-cells; and, if care is taken to select only the best cells, very good queens may be reared. This is a very simple method; but, as the bees often choose larvae too old for best results, it should not be used if a better one, that is not too complicated, can be used. A method that gives every whit as good queens as can be reared in any manner I will give in the following short article. In my earlier experience I used this, and I found it to give most excellent results. It combines two features that should appeal to the amateur; it is simple, and it gives the best of queens.

When the swarming season is at hand, go to the colony containing the best queen from which you wish to breed. In the center of the brood-nest place an empty comb. A new comb is preferable to an old one as the bees can work the wax much easier than they can in an old one. Leave this for two days, then examine it. If there are plenty of eggs in it, it is ready for use. If not, leave it another day. I prefer not to leave it more than three days, for we want to give this frame to bees for queen-rearing before any of the eggs are hatched. Assuming that there are plenty of eggs in the comb, we are ready to prepare a colony to build the cells. Go to a strong colony that has plenty of brood and bees. If their queen is a poor one, you can kill her. If she is a good one and you wish to save her, take a frame of brood and honey with the adhering bees and the queen, and put them into another hive. The nucleus thus formed may be built up to a full colony or it may be given back to the colony from which it was taken when we are thru using it for cell-building. After the queen has been removed, take out all frames that contain any brood or eggs. Brush off all the bees, then give this brood to weak colonies or to any colony desired so that it will be taken care of. This leaves the colony from which the brood was taken, both broodless and queenless. The bees should be left in this condition for two or three hours when the frame of eggs from the colony containing the breeding queen is placed in the center, and the remaining combs of honey and pollen are moved up close to it.

Let us now note the conditions brought about in this colony. A few hours before they were feeding a large number of larvae. They have now been without larvae for several hours, and the larval food has been accumulating so they are in a condition to feed larvae lavishly. They are also queen-

FROM THE FIELD OF EXPERIENCE

less and therefore in a condition to build queen-cells. They will at once begin to enlarge many of the worker-cells in order to make them over into queen-cells. Soon some of the eggs will begin to hatch and the young larvae will have the best of care from the many nurses that are there to care for them. In this manner they must choose larvae that have just hatched, and they feed them with an abundance of royal jelly so that the very best queens are reared. I have noticed in many cases the cells are enlarged before the egg is hatched, thus insuring that the young queen-to-be will receive an abundance of food.

In about 10 or 11 days from the day this comb was given to the cell-building colony, it should be removed and the cells taken care of. The cells should be cut out of the comb with a sharp knife. A circular hole about one and one-half inches in diameter should be cut so as not to injure the cell. If colonies are to be requeened, they should be made queenless at least 24 hours previous to this. Go to a queenless colony, cut a circular hole in the comb, and into it fit one of the cells you have just cut from the comb. These cells must be handled with care, or the young queen may be injured. The remainder of the cells may be disposed of in this manner if desired. Increase may be made at this time by dividing the colonies, and giving a cell to the queenless part. In a few days young queens should emerge and in seven or eight days more they will fly out to mate. One or two days later they should be laying. In this way you have reared some first-class queens, and just think of the fun you have had. Jay Smith.

Vincennes, Ind.

SAVE THESE WAX DIAMONDS

Simple Plan for Using the Splendid Queen Cells Built by Swarming Colonies

Because we have become dependent upon our southern queen-breeders in early spring is no reason why we should not rear some queens ourselves later in the season when conditions have become favorable for such work. As honey producers we have a better chance to select our breeding stock than the professional queen-breeder, and I believe it behooves us to improve this opportunity.

I will not speak of the manner or methods best suited to obtain well-nourished queens, but will only say that any honey producer who has sufficient time is not on his job if he does not make the best use of queen-cells which he may find in his most profitable colonies during the swarming season or when such colonies take it into their heads to supersede their queens. These are like diamonds to be picked up by the observant. If we should have the luck to find such queen-cells near the close of the honey season, there is perhaps no better way to utilize them than by removing old queens from other colonies and giving them these cells. This is the surest, the simplest, and the least expensive way to requeen and to introduce queens. Earlier in the season such a procedure would cost a portion of the honey crop; such a sacrifice we do not like to make, and I know of no short cut by which we may save valuable queen-cells in a very satisfactory way to me except by keeping them in nuclei.

One who has not all the necessary paraphernalia for queen-rearing may break up colonies that have cast a swarm several days previously and use them for this purpose. It may be possible to form as many little colonies from one mother colony as there are brood-combs, but I prefer to use two-comb nuclei. A queen-cell placed between two combs near the center will naturally be protected and kept warm. When the young queens have filled their two combs pretty well with brood, then is a very favorable time to transfer them to hives where requeening is desired.

Natural queen-cells built during the swarming season.

The introduction is very simple and not accompanied with any danger, provided it is to be done in the same yard. I just remove a comb with the old queen from the hive to be requeened and give one of the brood-combs, bees, and queen from the mating colony instead, making room for it at one side of the hive and being sure the new queen is on the side of the comb next to the side of the hive. Even when the requeened colony is a honey-storing colony, the work will go on uninterruptedly. The

FROM THE FIELD OF EXPERIENCE

bees do not seem to notice the change. This would not be the case should we give just the cell. It goes without saying that the whole nucleus might be united with the colony to be requeened, and such a procedure would indeed be the one to be preferred if we have no further use for it.

When it is the plan to continue such nuclei, provision should have been made to have other queen-cells ready at this time. The comb from the requeened colony, be it a brood or a honey comb, then takes the place of the brood-comb removed from the nucleus; the cell is given in a protector, or 48 hours later without the protector. Thus several queens may be reared or mated from each nucleus. When queens thus reared are to be used in distant yards the introduction must be by a different method, or the same as is being practiced with queens shipped thru the mails. F. Greiner.

Naples, N. Y.

NEW KIND BULK COMB HONEY

Produced Without Destroying the Combs Which are Used Again

I was much interested in the description, page 28, January Gleanings, of the Bedell capping press, for the extensive beekeeper. I think it will prove a great labor-saver. I have another quite different plan which I have been using in a small way for several years, and which I have not seen advocated in Gleanings.

When extracting the "fat," thick, nice combs are set aside until enough of them are secured to make a special job of handling them. After trimming off the burrs and other objectionable parts with a sharp knife, cut the cappings along each end-bar on both sides, and along the top-bar on both sides. Then stand the frame, bottom up, on a broad board, with cleats nailed around the edges to hold any honey drippings. Then with a sharp knife cut right down beside the bottom-bar to the top-bar, inclining the frame so the thick slab of honey will fall over on the board, capping side down, cutting the comb as close to the foundation as is safe without cutting it. The frames are then set aside to drain until enough are secured to fill the extractor, when what honey remains is thrown out.

Slicing off slabs of honey to be sold as bulk comb honey. The thin comb or midrib is then put thru the extractor and returned to the bees to be refilled.

The slabs of honey are then cut up into squares of suitable size to handle with a pancake turner, when they are put into buckets, capping surface up. When the bucket is nearly full cover all with extracted honey, seal the bucket, and there you have several pounds of the finest comb honey ever produced. It has no tough midrib, or burrs as is often the case with section honey, and the canned slices retain all the delicate aroma of the comb. Of course it may be called a "mussy mess," but to my notion it is the finest-eating honey produced. My friends and neighbors never complain of its "mussiness" when presented with a sample for their tables.

Mentone, Ala. Dr. C. F. Parker.

MEETING THEIR WATERLOO

Black and Hybrid Bees Being Wiped Out in Pacific Northwest

There are two ranges of mountains between the coast line and the interior. The coast range of mountains divides the coast proper from the valleys that extend to the Cascade Mountains, and east of the Cascade Mountains lies the interior country—a vast empire largely given over to producing alfalfa, grain, and stock. The alfalfa regions support thousands of colonies of bees that produce honey by the carload. The climate west of the Cascade Range is more humid and equable, and as one approaches the coast humidity increases and the temperature is more even, extremes being rarely known. If it were not for the rain that generally prevails in the spring months, the coast counties and valleys clear to the Cascade Range would be ideal for bees, but weather conditions are such that sometimes bees cannot fly to advantage. When we do have a few days without rainfall, considerable supplies are gathered and colonies build up rapidly.

But here's the rub: Just as soon as brood-rearing commences in earnest we look for foul brood, and we generally find some.

FROM THE FIELD OF EXPERIENCE

Is the germ *here*, or is it an epidemic? We hear it is not so prevalent in the eastern part of the State with its drier climate. Can the humidity be an indirect agent or cause? There is no question as to the greater susceptibility of blacks to this trouble *here*.

Colonies purchased from outside districts may appear to have no disease when bought, yet after a few weeks they will show foul brood in a greater or less degree. Did they get it *here*, or was it purchased with them? It is certainly discouraging to those who buy blacks expecting to Italianize, to find on the arrival of the queens that a large portion of the brood is diseased, and what was a promising colony is now reduced to a nucleus. You can readily see where it places us at the beginning of the season, and what a handicap the bees have to overcome.

Now here is the question: If the infection is here for the blacks, why not for the Italians? Nearly all Italians are clean and healthy. Is it any wonder that whole districts are bee-less owing to the ravages of foul brood when the colonies were blacks, or hybrids, which are but little, if any, better? There is a great chance here for research work covering the cause and the source of the trouble. The use of Italian bees and of the very best is an imperative necessity. I find the good old three-banders are by far the best for *this* trouble, as well as for all other purposes. Our fond hope and only salvation are in the recent organization of county and state thru which we expect to teach better methods of beekeeping, and persuade beekeepers to Italianize. Unless we can do this thoroly in all districts, the case is hopeless. The wonder to me is they cannot themselves see the light, but when shown they acknowledge the difference between thine and mine. One instance brings this forcibly to mind:

A so-called beekeeper, who at one time was a successful producer, was taken to inspect his colonies that were scattered thru the hills along the Columbia River. Seventy-five per cent of them were found to be rotten—many dead, and not a single healthy colony. Bees were blacks, equipment was fair, but prospects nil! Owner couldn't tell how it happened, but called it bad luck. He now sees the light, for after leaving the horrible mess, with recommendation to burn, a visit was made to a real beekeeper and the poor man's eyes fairly bulged when shown colony after colony of three-banders boiling over with bees, with healthy brood, and encouraging prospects. This is a practical demonstration of real value, and one that counts. The lesson taught this man will never be forgotten, but this doesn't tell us how it comes, or why. E. J. Ladd.

Portland, Ore.

[Much is already known about *how* European foul brood comes. Robbing of infected colonies is a fruitful source of infection. Nurse bees from an infected colony, which have been feeding larvae and probably have been cleaning out dead larvae, may return to the wrong hive after a play-flight. The beekeeper may transpose combs containing the infection from a diseased colony to a healthy one. Honey in some cases may be the medium thru which the infection is carried, tho in European foul brood this is probably not an important source. When one stops to think of how many ways the infection may be transmitted he ceases to wonder why the disease sometimes spreads so rapidly, and begins to wonder why any colony in an infected apiary ever escapes. *Why* it comes has already been demonstrated again and again in widely scattered regions thruout the country. It comes because the colony that gets it is either not strong enough to clean out the infected material thoroly and keep it cleaned out, or because the bees for some reason are not inclined to clean it out. Some strains of bees are more energetic than others in cleaning out the dead larvae, and at certain seasons any strain of bees do a better job of cleaning than at others.

Strong colonies of Italian bees usually keep the combs free from dead larvae except sometimes during the period of heaviest brood-rearing in the spring. If a good honey flow comes on at this time, the bees at once become more active in cleaning out the infection. For this reason, in the region east of the Cascades, where heavy spring brood-rearing comes on later and is followed by the honey flow from alfalfa, the disease would naturally be less prevalent, since the honey flow stimulates the bees to clean house better at the time European foul brood would otherwise have been the worst.

In any region where there is a dearth of nectar, or adverse weather prevents the bees from working in the fields at the time European foul brood usually does the greatest damage, the disease may be expected to be bad, and it is apparently always worse when the colonies are weak.

Wherever European foul brood is present the beekeeper, in order to succeed, must make a greater effort than ever before to have his colonies abundantly strong during the critical period for this disease in the spring. For this reason many beekeepers, who have fought their way thru a siege of this disease, say that they are securing larger crops than before, because they now have stronger colonies at the beginning of the honey flow. Strong colonies of vigorous bees cure many other beekeeping ills besides that of European foul brood.—Editor.]

SIFTINGS

J. E. Crane

GO it, Bill Mellvir, you are on the right track. An extra peck of bees to the hive in June is an acquisition worthy of your efforts; but don't let that cow (May Gleanings, page 292) get those bundles of bills, for money is going to be very useful during the next two years.

* * *

Grace Allen gives us, on pages 286 and 287, a charming picture of the life of a colony of bees for a year, well worth the careful consideration of young beekeepers.

* * *

"Beware a Shortage of Stores," is the first editorial in Gleanings in Bee Culture for May, and stands out like a danger signal beside the road, or a great red buoy over a submerged rock.

* * *

One of the vexations of swarm control is looking up queens when the hive is full and running over with bees. By F. G. Rauchfuss' method this can be largely avoided. Thank you, Mr. Rauchfuss and Gleanings. This will save many a hard-worked beekeeper a backache in looking up queens, and be worth many times the cost of a bee journal for a year.

* * *

One thousand dollars for the honey from 23 colonies! Well, that looks pretty good. We hardly need to be told that O. O. Barton of South Dakota is a model beekeeper. Just look at that picture, page 291. Notice how erect every hive is. No covers askew, no weeds growing in front of them. "Straws tell which way the wind blows."

* * *

On page 281, T. V. Damon recommends hospital yards for bees under treatment for European foul brood. This is certainly desirable wherever circumstances favor; but where no convenient place can be secured, the queen should be caged or removed at once. This will stop brood-rearing immediately in every hive affected and, of course will keep the disease from spreading in that hive or to adjoining hives.

* * *

Much space is given in the May number of Gleanings to the best method of the prevention of swarming, or perhaps I should say for controlling it. This gives us time to go over the whole subject again before we are too busy to study it carefully. For securing surplus, I notice also increased emphasis is laid by standard writers on the value of double brood-chambers and of a large supply of honey early in the season.

Mr. Atwater, page 279, uses cleats to strengthen the top of his brood-chambers, and instead of hand-holes for the lifting of hives. We have used them for more than 50 years and can testify as to their value. He also recommends extra combs of honey for spring in building up strong colonies for the main honey flow.

* * *

A. I. Root, on page 302, introduces us to a new variety of annual sweet clover. Let them come. This shows the variable nature of this plant that in the hands of a skilful plant-breeder may become one of the most valuable of forage plants. I noticed a wide variation in the small lot of annual sweet clover I raised last year. This plant, as now grown, is quite imperfect. If, instead of one stem, it would throw out a large number of small branches near the ground, so as to be more acceptable to stock, it would add much to its value. Its leaves should be larger than it now produces.

* * *

Some years ago shaking a colony on to empty combs or foundation was highly recommended. We don't hear as much about it of late. Yet Mr. Demuth, in his excellent article on "Comb-honey Production," says on page 276, "In some cases taking away the brood, leaving most of the bees, the queen, and the supers together in the hive on the old stand as in hiving a natural swarm, gives best results." Again he says, "In other cases the queens should be removed or killed, all queen-cells destroyed, and the colony left until the tenth day when all queen-cells should again be destroyed and a young laying queen introduced." Now what makes the difference? We have practiced the former method for many years, and have found that it is somewhat difficult to succeed in shaking if you have an old or failing queen, or if the colony is just at the point of swarming. Unless the colony is very strong the supers are liable to be vacated to some extent. If shaken on to foundation alone, they may desert the hive. A single comb, together with the frames of foundation, will usually satisfy the newly shaken swarm. We have found them liable to swarm out if even a little unsealed brood is given them; but several combs of honey or sealed brood can be given without tempting them to swarm out, and the emerging brood helps to keep up their strength. Under right conditions it certainly works well. If conditions are not right, it is better, as he says, to remove the queen.

HAPPY HOURS IN TEXAS

CONSTANCE ROOT BOYDEN
(Stancy Puerden)

WHEN we left the train in San Antonio early one morning in late March, after a warm and tiring trip from California, disappointing because we went thru the gorgeously colored desert portion at night, I had no idea I would be writing under the above heading a few weeks later. I was half sick, wholly heartsick at leaving California in "blossom time," and not a little homesick for our three children back in Ohio. One worries over her children even when her baby is 13 years old. But my personal conductor (let me abbreviate him into "p. c." hereafter in this article. He earned the title by whisking me around a five-thousand-mile loop in exactly 30 days, 9 of the nights and uncounted days in so-called sleeping cars.), disregarding my hints that he might as well leave me in a hospital while he transacted his business in San Antonio, took me to a dear old hotel near the Alamo. Having convinced the clerk, with some difficulty, that we must have a very airy and cool room, and having insisted that I eat some breakfast, my p. c. departed and left me to my own devices.

A refreshing bath followed by a soothing nap near three large, wide open windows drove away headache and exhaustion and presented the world as a delightful and interesting planet again. When your wife's temper shows room for improvement try that treatment on her, Mr. Subscriber. It is more effectual and agreeable than any bottled tonic.

At noon my p. c. returned and during lunch informed me that I was to go with a friend for a drive out to Medina Lake and that we must go early, as a storm was threatening. Soon after we started we came to a little river which winds wilfully thru the heart of San Antonio. Instead of the road crossing this river on a bridge in the conventional way, the river appeared to have the right of way and crossed the road, for our friend drove right down to the water and splashed into and thru it before I had time to more than gasp. I knew that horses could ford shallow streams but hadn't realized that automobiles were so accomplished.

Years ago there was a popular picture called "A Yard of Roses," and a companion picture, "A Yard of Pansies." My reason for betraying my age by the allusion is that I shall always remember that ride to Medina Lake as "Thirty Miles of Flowers." Our friend to whom I am indebted for the ride, B. I. Solomon of San Antonio, an ardent Texan, altho born in Florida, apparently inherited some of the wisdom of his namesake. He had previously told me he was going to keep us in San Antonio until I was ready to write on "My Texas" as I had written on "My California" a year ago, and then he started on that beautiful "Thirty Miles of Flowers" drive without a hint of what was in store for me.

Words cannot do justice to flowers, nor can pictures; but if an artist should make an attempt to paint the wild flowers of Texas he should have on his palette not only all the brilliant colors known, but should have the ability to mix the delicate pastel shades as well. Flowers were everywhere, growing at the side of the road, in the fields, on rocky hillsides and even in the trees. Imagine a field, its green background almost covered with graceful flowers of the purest deep blue, a rare color in flowers, much the shade of certain hardy larkspurs. Across the road and only a few feet from the blue flowers were great masses of flaming rose flowers, varying from salmon rose to a pure rose color with no yellow in it. The only cultivated flower which I can recall approaching it in brilliance is the flame-colored azalea. The blue flower was the Texas "bluebonnet," the State flower. It is the same lupine which grows in abundance in California, but it seemed to me the Texas lupine was more purely blue with no hint of purple in it. Another wise gentleman, H. B. Parks, a Gleanings correspondent and enthusiastic botanist, whom I met the next day, told me that the bluebonnet is not a honey plant but yields large stores of pollen at a time when it is much needed by the bees.

The flaming rose flower is commonly called the "Indian Paint Brush," and is similar to the bougainvillea because its true flower is tiny and inconspicuous, and it is the surrounding foliage which is so gorgeously colored.

Just to mention a few more of the most striking, there were pale yellow, primrose-like flowers with a black blotch in the center of each flower; yellow blossoms resembling marigolds, flowers of a delicate pink growing in large clusters; large, cup-shaped white flowers with buds in varying shades of pink, the same pink color sometimes showing on the under side of the petals of the fully opened flowers; cup-shaped flowers of a brilliant wine red; and bunches of blue flowers growing in a large shrub or tree, looking at a little distance like two-dollar bunches of violets all over the tree. On close examination these last named appeared more like the wistaria or locust in shape, and Mr. Parks told me it is known as the mountain laurel in Texas on account of its evergreen leaves.

There were many other wonderful flower-

ing trees—the pink flowering acacia, the catselaw; that wonderful honey plant, the mesquite; some which I shall not attempt to spell, and many more which I have forgotten. The mesquite is beautiful, its foliage much like the pepper tree of California, and the dark-green mistletoe, which frequently clings to it, contrasts beautifully with its light-green leaves.

I was much interested in a low-growing purple flower which seems abundant in every part of Texas, even on the desert. From its clusters and general habit of growth I was sure it was a cousin of the garden verbena, and Mr. Parks told me I was right. A pretty variety of dwarf phlox also grows wild in Texas.

MEDINA LAKE lies way back in the hills; and, as the road climbed higher, different varieties of flowers appeared, and the contrasting shades of the evergreen and various deciduous shrubs on the hillsides were beautiful. A mammoth irrigation project with immense dam has greatly enlarged the lake until it is now some 25 miles long, winding among the hills. The view of the lake and gorge from the top of the great dam was wonderful, altho Mr. Solomon was much disappointed because the approaching storm, which covered the sky with gray clouds, prevented me from seeing the lake in sunshine, when it is as blue as the Caribbean sea. My p. c. saw the water at its bluest last fall, and had conspired with Mr. Solomon to give me the treat; but he never saw the "Thirty Miles of Flowers" at their best, so I rather think we are even. On the way back Mr. Solomon obligingly stopped the machine at various points and gathered specimens of flowers until I had an armful of beauties, and the heavy storm caught us. Ordinarily I dislike to ride over macadam made slippery by rain, but a combination of chauffeur and roadster which can ford streams is not likely to skid, and we returned to my p. c. in good order.

AN equally delghtful drive, a few days later, was thru Brackenridge Park of San Antonio. The same little river beautifies this park, and miles of cool drives thru the trees make it an accessible playground. San Antonio, like so many towns thruout the West, by maintaining a public camping ground, shows a charming spirit of hospitality to motor tourists or home seekers traveling by wagon. In Brackenridge Park fuel, water, and lights are free to campers in a section reserved for their use.

But the best part of the park is where someone with a vision has transformed what must have been an eyesore into a beauty spot. We had been climbing rather steep grades, and Mr. Solomon was craftily calling my attention to various interesting features on the right when I happened to turn my head to the left, and there, way down below us, so far down it almost made one dizzy, was a beautiful sunken garden effect, miniature lakes, islands, and arching stone bridges, flowers, shrubbery, green grass and vines, rough steps hewn out of the rocky walls at the sides leading to pavilions with roofs thatched with palm leaves and supported by pillars of small stones, a sort of Japanese garden with a touch of the Spanish influence. It is charming now and with care will grow more beautiful from year to year, and just a short time ago it was nothing but an abandoned stone quarry.

When we were crossing the endless miles of desert country a few days before, I had been impressed with the strange formation of many of the hills. Loose, flat stones were piled one above another in such a way as to suggest towering retaining walls of masonry. It was hard to believe that they were not built by human hands. I'd love to go over that route with a wise geologist to explain the country, accompanied by my own p. c. also, of course.

To return to the park, much of the picturesque effect was obtained by the use of just such stones, used in a manner to suggest the way they appeared in the desert. For instance, the pillars which held the lights in the park and sunken garden were slender, pyramid-like columns of these stones, and the electric lights were cleverly hidden near the top. They were also used to construct the pillars supporting the palm-thatched roofs of the pavilions and in the bridges and dams.

And the flowers proved that the State which has such wonderful wild flowers can also grow most beautiful garden flowers. There was a great profusion of dwarf phlox, verbenas, and pansies in the greatest variety of rich colors, and I imagine summer flowers will be just as abundant later on. There were aquatic plants in the little lakes and fine shrubbery everywhere.

A few adobe Mexican houses near by, de luxe editions, you might say, gave one opportunity to buy pottery and curios and furnished "local color." Mr. Solomon bought some tamales; but, in comparison with the delicious dinner which Mrs. Solomon had ready for us on our return, they seemed a little tasteless.

SOMEONE may wonder why I haven't used the title "My Texas" after an invitation to do so, which might be called a hospitable threat. I did intend to, and then it occurred to me it would be rather presuming to adopt the whole immense State when I have never stopped in any town in it except San Antonio, and my two visits there have been altogether too brief.

For several reasons the "Happy Hours" title is likely to fit any travel articles which come off my typewriter; I dearly love to

(Continued on page 382.)

Beekeeping as a Side Line

Grace Allen

WITH all the wealth of practical beekeeping literature available, it is unforgivable for anyone to start keeping bees without providing himself with either books or government bulletins or bee journals, or, better still, all three. Take the one matter of disease, for instance, to which unfortunately bees are subject; only the beekeeper who reads carefully (and watches his bees closely) can detect its early presence and know how to treat it.

One thing, however, that the new reader must try to avoid is the state of mind that cannot see the woods for the trees; where he becomes so lost in details that he fails to get a comprehensive view of the whole sequence. Before trying to master the many different systems practiced by the many different beekeepers in the many different localities, he should have in mind the general outline of the season's work. And it must be remembered that it is merely the march of the season itself and the natural activities of the bees themselves that determine this.

Beekeeping is far from being an exact science. There are some very definite (and some, alas! very indefinite) principles to guide the new sideline beekeeper. But there are no set, exact rules. The wise and beloved Dr. Miller made famous the axiom that bees do nothing invariably. And necessarily the success or failure of any method depends on the way the bees react to it. And the beekeeper, too; for one man succeeds better with one system and one with another. But anyone who has made himself familiar with the succession of main nectar-bearing flora in his locality, and who understands the seasonal development of a colony and its natural activities, has already much of the fundamental knowledge on which all beekeeping science and system has been built.

In this department last month, four outstanding phases of bee activity were mentioned, brood-rearing, nectar-gathering, swarming, and winter-clustering. The work of the beekeeper is to encourage brood-rearing and nectar-gathering, to discourage swarming, and to make wintering as favorable as possible.

North of the Ohio River practically every beekeeper either puts his bees in a cellar or puts winter cases around his hives and packs them with several inches of chaff, shavings, dry leaves, or similar material (leaving, of course, entrances for air and an occasional flight of the bees). South of about the Ohio River latitude, cellaring is not practiced at all and packing by only a small number. But whether bees are wintered in cellars in winter cases, or left unprotected on their summer stands, winter is a severe time for them. So the first thing to do in the spring is to see how they have come thru,

Their great business now is brood-rearing. Thousands of young bees must be reared to take the place of the old ones that have lived thru the winter and are now dying off so fast, and to have the colony at its maximum when the main honey flow comes on. Every hive, therefore, must have a good queen, enough bees to care for the young, and ample stores to feed them.

If there is danger of their running short of stores, a rough estimate of this can be made, even before a general examination is advisable, by raising the back of each hive to get an idea of the weight. One of the lighter ones can be opened and quickly looked into, and its condition can serve as a guide in estimating the others. Those that are too light must be fed a syrup made of equal parts granulated sugar and boiling water. Put it in pans with tiny chips as floats; or in friction-top pails with tops perforated with tiny holes. In the evening just before dark, take the cover off the hive to be fed, set an empty super on, gently smoke the bees out of the way, and set the pan containing the warm syrup, or the inverted bucket, directly on the frames. Cover the hive carefully. Probably by the next night the pans or buckets will be empty, when they and the extra super should be removed.

The time generally accepted for the first regular examination is a warm spell during fruit bloom. It is a truism of the apiary that hives must not be looked thru, if avoidable, when there is no nectar-flow. For with no natural supply open, bees will quickly start pillaging any sweets exposed. In a remarkably short time such robbing may throw a whole yard into an uproar, an experience greatly to be dreaded. The wise and experienced beekeeper will wait, then, till there is enough nectar-bearing flora to claim their whole attention. Then he may make his examination in that gentle humming peace that seems both the inner heart and the outer garment of a beeyard.

One after another the hives should be examined at this time, to learn the general condition and especially to make sure each one has a queen; for sometimes queens die during the winter, and where there is a queenless colony there will soon be no colony at all. If any are found queenless, the easiest and probably the best thing to do is to unite such a one with a queenright colony. Do it this way: In the evening gently remove the cover from the queenright col-

ony, lay a single thickness of newspaper over it; with equal care remove the queenless colony from its bottom-board and set it quietly on the other. In a few days it can be reduced to smaller hive space, if desired, by removing empty combs. Very weak colonies can be united the same way with strong ones.

It is not necessary to find the queen to know she is there. The presence of worker brood in various stages, including eggs, may be taken as a sign of a laying queen in the hive. (Worker brood is sealed flat, drone brood with rounded cappings.) But many beekeepers clip the queen's wings at this time, to prevent her going off with a swarm. It helps, too, in telling the age of the queen. Some clip the right wing one year and the left the next. Finding an unclipped queen in a hive, where there was one clipped, shows that the bees have superseded the old one. If one wants to find the queen, he should use as little smoke as possible and work quietly and gently.

As the main honey flow comes on, supers must be added. Indeed, the one great point to remember during the spring and early summer is to give plenty of room. This applies to both brood and honey. So if one uses a queen-excluder, he must see that there is room both above and below. There are many methods of handling bees at this time, but the one underlying thing to remember is plenty of room. The queen is laying rapidly; nectar is coming in rapidly, and, being very thin, must be spread out in many cells to be evaporated and ripened. See that full capacity of storage is granted every colony.

Often this one provision of plenty of room will prevent swarming. Often it will not. Swarm prevention is the greatest of apiarian problems. Swarms must be prevented if the full honey crop is to be secured. A great many beekeepers examine their brood-chambers every week during the swarming season, to look for evidence of swarming preparations. Others put their trust in large brood-chambers, some using a size considerably larger than standard, others using two standard bodies, both full depth, or one full depth and one shallow.

The sign of swarming preparations is the presence of queen-cells. If these long cells, meant to rear queens in, are just being started, they can be cut out and at the same time additional room be given, which may do away with the swarming desire; tho usually it will only give it a setback and will have to be repeated a week later. If the cells have advanced to the point of containing larvae, it will be necessary to do something more. The common practice then is to put a new brood-chamber with 10 empty combs on the bottom-board, exchanging one of these empty combs for a comb of brood with the queen (but no queen-cells), put the queen-excluder on, then one or two empty supers, and the old brood-chamber on top with all queen-cells destroyed. A week later this raised brood is again examined for queen-cells, which are again cut out. Thus are the bees kept together.

But if a swarm issues, and the queen is clipped, the first thing to do is to find her. She is usually outside the entrance, unable, of course, to fly. Secure her first; then quickly set the hive aside and put in its place one containing empty combs or full sheets of foundation. Soon the swarm will miss the queen and return. As they rush into this new hive on the old stand, the queen is released at the entrance and goes in with them. Any super on the old hive should be set on this new one, over a queen-excluder. That cares for the swarm. The parent hive can then be set on a new stand with all cells cut out, except one good sealed cell to produce the new queen.

If a swarm comes out with a queen not clipped, it can be secured when it clusters, shaken into a hive, and set where desired. There are almost an indefinite number of possibilities at this time, but these are the simple moves usually made.

Colonies must be kept strong at all times; only strong colonies roll in the honey, and only strong colonies keep out moths. Italian bees have been found particularly resistant to disease and free from moths. If one desires to Italianize a colony, or to requeen it for any reason, let him order a queen from some reliable breeder. When it arrives, he should find and kill the queen to be replaced, and introduce the new one according to directions on the shipping cage.

In removing the honey, after it is ripened and sealed, only the surplus, left after allowing from 30 to 50 pounds for the bees, should be taken. Extra supers may then be removed, piled in tight stacks, and treated twice, a week apart, with carbon bisulphide to protect them from moths.

Sometimes an adverse season, or an unwise beekeeper, will leave the bees without enough honey in the fall to take them thru the winter and on to fruit bloom, at least 30 pounds being required. What they lack must then be given them. This should be done in the evening, giving a warm syrup made of two parts granulated sugar thoroly dissolved in one part boiling water, allowing each colony as much sugar as it lacks honey.

Having made sure that each colony has a good queen (preferably young), plenty of bees, and 30 or more pounds of sealed stores, and having united any weak colonies with strong ones, as in the spring, one is ready for winter. Bees can be wintered in one full-depth body or in two, or in one full depth and one shallow; but the bulk of the stores must be in the upper story. Queen-excluders must be removed, and entrances should be contracted. And whosoever plans to pack, let him pack early.

FROM NORTH, EAST, WEST AND SOUTH

In Southern California.—Prospects have gone from bad to worse, until it has become a serious question with many of us whether it will be wise to take any honey at all from the bees. Only a part of the colonies have stored in the supers, and those not so fortunate may need help to bring them thru the next winter. I am speakng of the orange as well as the sage and other unirrigated sections. The orange blossoms bid fair to yield nectar; but very unfavorable weather, together with the fact that the ground was very dry, cut the crop in many cases to almost a failure. Cold days and frosty nights prevailed much of the time during the orange bloom. Colonies of good strength at the beginning of the honey flow did not gain in numbers and were inclined to pack the brood-chamber with honey, and not go into the supers. The bees would hang out in front of the hives while the supers were empty—a thing almost unheard of in this part of the country. Only occasionally an apiary is found where there was any swarming to speak of.

The next thing for the migratory beekeeper to do is to move, but where is the question. Thousands of acres of land formerly planted to lima beans (a honey producer) has this year been planted to blackeye beans (a non-honey producer), grain, or other crop, thus very materially curtailing the range from that source.

I have been speaking in a general way. There are small sections of the country where there was more rainfall and where the beekeepers may get some honey. Or there may be a different variety of honey plants which bloom at a more favorable season. However, one cannot expect the big crops and good prices of the last few years to continue indefinitely. The fellow who can get his bees thru and have them ready for the honey flow every year is the one who will make a success of the business.

A fair sample of the newer type of beekeeper is here given. A professional man, whose son is a teacher, became interested in bees. The son soon did likewise. Last year they purchased odd lots of colonies, and together with their former holdings had nearly 100 colonies. These were on an orange location, and they made a good crop of honey. Last season being a very favorable one, about all a person had to do was to put on enough supers, and the bees soon filled them. This year these same men moved their bees to what is considered a good orange and sage range. After the orange flow, the older gentleman asked the man who had moved the bees to come and look over them and tell him what was the matter. He found that there was hardly as much honey in the hives as before he moved them. I had the same experience about 20 years ago, and the memory has stuck ever since. If the conditions and weather are not favorable, the bees will not produce the honey. In all lines of production we live in cycles and in order to equalize all things the game must be played from the beginning to the end, and not for one or two years only.

While honey still retails at a good price, there does not seem to be much demand. Comb honey is scarce and sells at from 25c to 40c per pound. Very few beekeepers in these parts produce comb honey any more, but the prospects for a good price for several years should encourage those who like it to produce it again.

This will be a good year to requeen the colonies which have dark or old queens. Much better results will be had if colonies which are drawing cells are fed once a day. There are so many different methods of raising cells that we will not go into detail here. Most beekeepers know how to graft cells and the conditions under which colonies will best build them. L. L. Andrews.

Corona, Calif.

* * *

In Texas.—The beekeepers of Ellis County held their annual field meet on April 8 at the home of T. W. Burleson in Waxahachie. Beekeepers were present from three counties, and a very interesting program was carried out. Several colonies of bees were transferred, and the entire work of the pound-package operation, from the shaking of the bees into the packages to the building of colonies from the packages, was carried out in full. This was a very rare treat to the majority present, as they had never had the privilege of seeing bees prepared for shipment in combless packages.

The beekeepers of the Guadalupe Valley Beekeepers' Association held their annual field meet April 13 on the Guadalupe River near Seguin. Over 50 beekeepers were present. After a bountiful picnic dinner the beekeepers were addressed by Louis H. Scholl, editor of the Beekeepers Item, on present-day problems confronting the beekeeper; by E. G. LeStourgeon, on Market Conditions; by H. B. Parks, on Honey Plants; by Miss Alma Hasslbauer, on Beekeepers' Associations; by Mr. Alex, on Queen-rearing; and by Mr. Solomon, on Marketing of Apiary Products. The program closed with a question box, which brought out a number of quite interesting discussions. This association has been holding field meetings for five years, and this year because of the increase in interest among its members it will hold a second field meet in August.

Differences in locality were forcibly brought to mind the first part of the month during a visit to Dilley in Frio County,

FROM NORTH, EAST, WEST AND SOUTH

Texas. Dilley lies just 70 miles south and slightly west of San Antonio, and apparently has the same climatic conditions. However, at Dilley, there has been an unusual spring honey flow from huajilla and mesquite and other annual spring flowers. A great deal of honey has already been extracted, but here at San Antonio the cold winds and rain have put an end to the spring honey flow, and the bees are just making a living. The more one studies local conditions, the more vital the question of locality becomes. It is safe to predict that after a few years a beekeeper will be just as careful in selecting bee localities as peach-growers are in selecting locations for their orchards today.

The weather for the past month has been extremely discouraging to the beekeepers. The summer weather of January, February, and part of March caused the bees to build up very rapidly, and the honey plants were in excellent condition and promised a heavy honey flow. April has been very cold, and heavy rains have occurred. This put an end to brood-rearing in many sections, and in almost all parts of the State a large amount of chilled brood has been reported. The hope of an early honey flow is gone and in only a few localities are the bees in the best of shape. It has been said that the worst thing for a dry country is a rain, and this has proved true in southwest Texas. The rain put an end to the mesquite honey flow, and the huajilla has produced probably one-fourth of the normal crop. These conditions, which have entirely or partly done away with certain honey flows, will produce others which were despaired of. The horsemint is coming into bloom and promises to give a very good crop. The cold weather has been very adverse to queen-rearing and also to the combless package bees. Had it not been for the cold weather in the fall which caused buyers to ask a delay in the delivery of their orders, it would have been impossible for sellers of live bees to deliver their orders.

The active work of the Extension Division of A. and M. College in beekeeping is being shown in the interest taken in that subject in counties where beekeeping has been little known. D. T. Griswold, county demonstration agent for Denton County, has arranged a county demonstration exhibit to be held in May. One day will be beekeepers' day, and demonstrations in transferring and in the handling of bees will be given by R. R. Reppert, Extension Entomologist, who will have charge of this work.

San Antonio, Tex. H. B. Parks.

* * *

In Ontario.—The season is unusually early here in Ontario, so far as spring bloom is concerned. Willows, fruit bloom, etc., are ahead of a year ago by three weeks. Clover is not correspondingly so far ahead, and this means a long period of dearth between fruit bloom and clover. This is a time that gives the apiarist a lot of work unless stores are in the hives in abundance. Colonies wintered outdoors, at least so far as our own apiaries are concerned, are almost universally heavy with stores.

Our 400 colonies wintered inside are just the opposite, altho the bees wintered indoors were fully as heavy last fall as those left outside. An exception to this rule is found in the 60 wintered here at home in the underground cellar where it was cooler and of more even temperature thru the winter than in the other two repositories—one above ground and the other in an ordinary cellar. Evidently in the two latter places the bees got too warm and did a lot of winter brood-rearing, sealed brood being in evidence in the hives when placed on summer stands.

Any change in the honey markets since last writing shows a tendency towards lower prices on the part of the wholesalers in an attempt to unload all stocks before the new crop comes on. Prospects, as stated in last issue, are none too good in many parts of the Province, so far as clover is concerned, but much better in western Ontario than in eastern parts.

As there have been different reports circulating about the net-weight law as recently amended at Ottawa, so far as it concerns honey containers, the following copy of letter from the Department of Health, Ottawa, should clear up matters. As is well known on this side of the "line" five and ten pound honey pails, as well as smaller sizes, are almost always sold by gross weight. The letter in question has been forwarded to me by one of the well-known pail manufacturers, with a request that I let as many know as I can, as the impression had gone out that all honey would have to be in net-weight pails this year. The letter follows:

"Gentlemen: Replying to your letter of the 11th instant, in connection with honey pails, I may say that, as the pails you showed me in this office designed to contain honey are not considered by us as sealed containers, the law in regard to statement of net weight on them does not apply.

"Yours truly,

"J. A. Amyot, Deputy Minister."

In view of the fact that many had already bought large quantities of gross-weight pails for the coming season, the above information will be very welcome indeed. The pails submitted to the office were of the "penny lever" type.

As some have wondered how the underground cellar showed up this past winter, the season is far enough on now to allow

FROM NORTH, EAST, WEST AND SOUTH

me to give a fair report. Bees went into the cellar under poor conditions as they had no flight for three weeks or more before going in. They were placed inside on the first week in December and taken out the first week in April. The cellar roof is of cement, quite dry when bees were put in, but reeking with moisture a week after. It was in that condition all winter, notwithstanding all that I could do in way of ventilating, altho the main ventilator was open most of the time. Water dripped from the roof of the cellar all winter forming pools on the floor.

The temperature was never above 46 degrees F., and never below 43 degrees F., even when the ventilator was wide open. The bees were heavy with good stores, and most of the colonies were clustered on the fronts of the hives all winter. The clusters had at least a pint of bees in each. This is an unusual condition so far as I can learn from others. We have had little experience in cellar wintering. But notwithstanding all the dampness, the bees wintered very nicely indeed, and are at present in good condition. Stores were not consumed very fast, and all are heavy at this date (May 10). I would never build a cellar with a cement roof again. I think that this same cellar, with roof over all covered with three feet of sawdust instead of six inches of cement and earth on top, would give better results and eliminate the moisture. Quite likely that will yet be done, that is, the earth be all taken off, large holes punched thru the cement top, then a roof built over all, and some three feet or more of sawdust piled over the cement.

As this is being written, we are just finishing preparations to move over 200 colonies of bees, with an immense amount of supplies, some 170 miles. Not a pleasant job but one that must be done; so I will "ring off" and get to work, with the promise of giving to the readers of Gleanings in some future issue, if I am spared, any pointers out of the usual order that we may come across in the trip.

Markham, Ont. J. L. Byer.

* * *

In Pacific Northwest.— Horace Greeley once said, "Go west, young man." Apparently many young beekeepers and some old ones are following his suggestion, since the writer so frequently receives letters of inquiry about the possibilities of honey production in the Northwest. It is with the desire to set forth honestly a few of the opportunities and problems of the prospective beekeepers that the writer here gives some facts gleaned from his travels over the State of Washington, as special field agent for the Department of Agriculture.

Commercial honey production at present is confined largely to the irrigated sections of Yakima Valley where the principal sources of nectar are alfalfa and sweet clover. The most important hay-producing section, which is south and east of the little town of Parker and extending to about the county line, is quite well occupied by large honey producers. Most of the commercial holdings range from 100 to 500 colonies, while some three or four producers manage from 600 to nearly 1000 colonies. Annual averages range from 40 to 90 pounds. That portion of the Yakima Valley and the Wenatchee and Okanogan district are capable of supporting a few more commercial yards if properly located. However, one must avoid the fruit districts until there is some practical solution to the spray-poison problem. The Walla Walla district, which is under irrigation, is quite well occupied, but not overcrowded.

Second in present commercial production but first in possibilities and problems are the fireweed districts which include the burned-over timber sections west of the Cascade Mountains. Fireweed, or willow-herb (*Epilobium angustifolium*), is not very dependable as a honey plant except where there is considerable soil moisture. It is at its best in the section just mentioned, but is found growing in about every county of the State. It is adapted to both high and low altitudes. It is also at its best from about two to four years after a fire or until other vegetation begins to crowd it out. It blooms during July and August, and the beginning and ending of the flow vary with the elevation. The honey is water white, of mild flavor, and ideal for comb honey. It sells better on the market than alfalfa honey.

At present there are relatively few commercial beeyards of over 100 colonies. On the other hand, west of the Cascades, there is an exceptionally large number of small careless beekeepers with dark bees.

In a few localities on the west side clover is of importance. Beekeepers report that in the northern counties it does not yield nectar until July, while in the southern counties it yields in June.

Third in present production and third in promise is the northeastern section of the State where the following plants are more or less important: White clover, alsike clover, fireweed, and snowberry. There are almost no commercial apiaries.

There are many wideawake and progressive commercial beekeepers in the State, and they are rapidly coming together in State and local associations.

More detailed information relative to specific localities may be secured thru the Office of Bee Culture, Department of Agriculture, Washington, D. C., where the writer's geographical reports are on file.

Corvallis, Ore. H. A. Scullen.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Stealing Eggs and Natural Selection. In the Feb. number of Gleanings Allen Latham criticises the conclusion of W. C. Davis (see the January issue) that a queenless colony stole an egg from which to rear a queen. His surmises seem more believable to me than Mr. Davis' explanation. Furthermore, the logic of his claim is good—that if an instinct were observed in any one case it would probably be common or universal. But what I wish to call attention to is the peculiar nature of that hypothetical instinct, for I can think of no other similar case.

Here is an instinct which would be very valuable to the race, and hence one that would seem liable to be developed by natural selection should it ever appear. On the other hand, its preservation by natural selection would be exceedingly difficult. In a way it is unique, for if a colony should steal an egg it would not be saving its own family but the **future family of another queen.** Let us suppose, for instance, that it was a colony of blacks that did the stealing, and that the stolen egg was that of an Italian queen. Altho the household (the colony) would go on, the family (the blacks themselves) would be replaced by yellows, and any inherited quality of the blacks, such as the egg-stealing instinct, would die with them.

The only conceivable way in which the prolongation of the life of the **colony** might enhance the chances of passing on a sporadic instinct, like the egg-stealing, would be the possible longer life, in an active colony as compared with a dying one, of the drones and the consequent increased chance of their mating and handing it down.

Absolutely the only way for that instinct to get a foothood would be for it to be bequeathed to a number of queen-daughters (as in the case of a "Mendelian dominant") which should settle in a restricted locality. In that case, when an egg was stolen it would be likely to be one bearing the instinct. If such a strain were built up, it would have a decided advantage over ordinary ones in that a queenless colony would not, as at present, be doomed. Such a fortunate strain might spread and, thru natural selection, supplant the old type.

I should not have said that this instinct was unique—there is (or rather, **could** be) one other of the same type, the instinct of a queenless colony to join a queen-right one.

Bethlehem, Pa. Robert W. Hall.

Increase or Honey—Which? In Gleanings for August, 1920, page 489, E. J. Ladd gives an instance of one man who increased from 40 colonies to 75. These 75 colonies averaged 325 pounds of extracted honey each. We often have good figures like this from various sections of our country, but let us study **Mr. Ladd's** article a little. Would he have secured an average of 609 pounds for the 40 colonies, and would his profits all around have been one-half as much had he made no increase? We think not.

Had the original 40 colonies been run for honey alone, they probably would not have made more than a full-depth super of honey extra or about 385 pounds average for 40 colonies, as against an average of 325 pounds for 75 colonies, plus the value of the 35 colonies increase.

A long gradual honey flow is more suited to making increase, while a big short honey flow is better for honey production. We have many instances of those who produced a much greater surplus, more instances of an equal surplus, but by far the most instances of a reduced surplus after making increase. One should not increase beyond the amount of bees he can handle well; but, if increase is needed, it is economy to make some increase, even at a sacrifice of honey. In this connection J. J. Wilder says: "Any beekeeper will find it best to split up his very strongest colonies, make two of each, run both right on thru the season for honey, and at the end of the season he has about doubled the amount that he would have obtained from the single colony, besides having the increase. The beekeeper who says his bees never get too strong perhaps has only one great honey flow, and it is only a few days in duration. Such being the case, he is right, of course, but such localities are rare."

Point Caswell, N. C. C. E. Corbett.

Smoking Crushed Bees. Referring to Morley Pettit's article on "Colony Control" in the April number of Gleanings another thing always making bees want to sting is the crushing of bees when a careless beekeeper is at work. Just one bee accidentally crushed will cause most of the other bees in the hive to elevate the abdomen, arching so as to show a bit of white petticoat between the segments near the tip. This is accompanied by a sullen buzzing and the darting forth, here and there, of bees on the war path. And if one of these darters gets a chance at the beekeeper she stings as tho she meant it. Moral: Don't crush any bees when opening the hive and removing combs. If a bee should be crushed in spite of you, try holding the nozzle of the smoker close to the contaminated area of glove or hive and giving a few strong puffs of smoke to neutralize the odor.

Ventura, Calif. Flora McIntyre.

HEADS OF GRAIN FROM DIFFERENT FIELDS

Fogs Affect Nectar Secretion in Sage. I read with interest about Elton Warner's locating his apiaries by the use of soil maps. In California I locate apiaries by closely watching the rainfall charts of the weather bureau; for, as a rule, the soil here is of a soft granite or sandy composition that doesn't hold moisture well if we have hot winds off the desert.

As a rule, these hot winds come about the time the sage is in bloom. Some years they come early enough to kill the orange bloom. I have seen the ground just brown under the orange trees from falling orange blossoms killed by one of these hot desert winds just as the honey flow started. There are some districts where these dry winds are more severe than others. The sage weevil has caused the beekeepers the loss of many a good honey crop, even after we have had good rains and the honey prospects were looking good.

As a rule, very little sage beyond or above the fog belt will be found giving surplus honey. The sage, like the lima bean, does best and produces the most honey in the fog districts. Owing to the fog, some years we have a fair yield of honey because the sun can't dry out the foliage of the honey plants. Many beekeepers then extract too closely, and along comes one of those hot desert winds and dries up everything. It also drives all the haze, smoke, and fog far out to sea. The sun then finishes what the wind didn't. A. E. Lusher.

Pomona, Calif.

Sending Queens Long Distance. Living in a place where queens sent me by mail were often three weeks or even longer under way, I noticed that when several cages were sent me, tied together, that the queens in the outer cages were often dead while those in the inner cages were all right. I, therefore, requested the senders to place two empty cages outside those containing the queens, and with perfectly satisfactory results. An an extra precaution some moist cotton waste can be placed in the outside cages. It is likely that handling, heat, sunlight, etc., affect the outside cages more than the inner ones.

St. Thomas, Virgin Islands. Axel Holst.

This Man Says They Don't. I think Allen Latham is right (see February Gleanings, page 99) in believing that there is always a queen present to lay the egg from which to grow a new queen. Last year I had a reason to move a strong colony to a new location. Some hours later I noticed many of the field bees returning to the old location. An extracting super, which had not been on a hive for six months, was placed there by me for the purpose of catching the field bees. They began to enter without hesitation; then to my surprise I noticed an old crippled queen crawling towards the hive. She was allowed to enter; but the next day she was missing, and a few days later I discovered two or three queen-cells, which in due time yielded a good queen. If I had not seen the old queen, I might have believd that the bees had stolen the eggs.

Fairfax, Iowa. C. F. Wieneke.

Hiving Swarms on Foundation. If bees are hived on all foundation without a queen-excluder and the supers are transferred to the new hive, the queen is very likely to deposit eggs in the supers, even when sections are given. Pollen also will be found in many cells. A frame or two of empty comb will generally prevent all such trouble. Even if a queen-excluder is used, there will be some pollen in sections when no empty combs are used with the frames of foundation.

East Avon, N. Y. A. C. Gilbert.

Why Drones Vary in Color. I have been much interested in a discussion going on in your magazine regarding the drones of Italian colonies. Last summer and fall I could not understand why all my drones bore such a close resemblance to enormous horse flies, almost blue with only occasionally a faint shadow of a golden band. Imagine my surprise on opening my hive this spring to find wandering over the frames drones which were almost orange-colored in their markings. They are very different-looking drones from any I found in my colony last year. Is it possible that the time of the year the drones are reared affects the golden bands? Or does the food or some other condition make the difference? They were all children of the same queen.

Freeport, N. Y. Magdalen Sproull.

Hospital Yards. We got some very valuable information from our State inspector, Mr. Schweice, who met with us at our last meeting. Mr. Schweice is one of those pleasing fellows whose suggestions are always bright and up to the minute. One thing Mr. Schweice advised us to try, is a field hospital, equipped for handling foul brood, the expense of fitting up this hospital and its maintenance to be borne by the association. The members of our association fell for this

HEADS OF GRAIN FROM DIFFERENT FIELDS

idea with good cheer, and if their present feelings do not wane within the next two or three months the Churchill County Beekeepers' Association will have a well-equipped hospital far enough isolated from any apiary to eliminate all danger of contagion, where the beekeepers can properly treat their sick bees without endangering the lives of the healthy ones.

Churchill County, Nev. G. Russell.

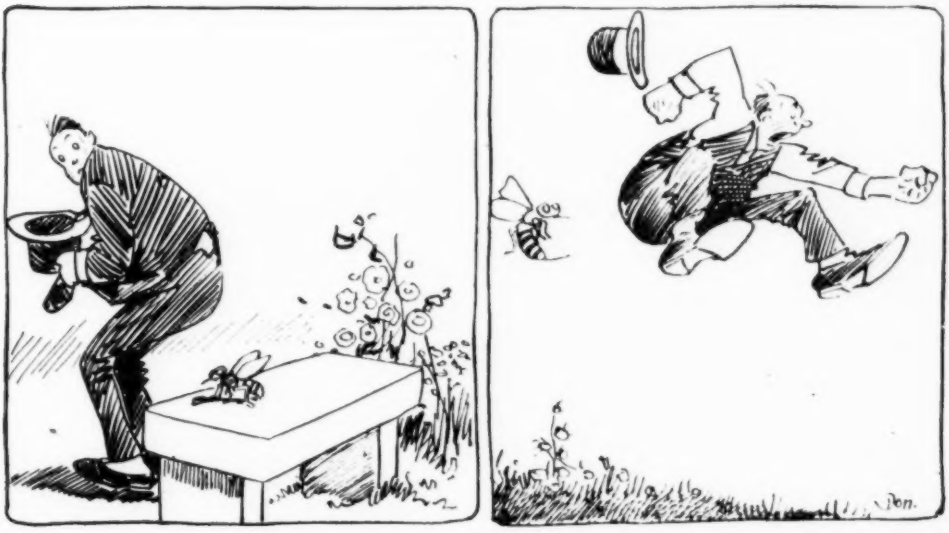
Nectar From First Crop of Alfalfa. Before the Roosevelt dam was built we had a dry winter around Phoenix, with but little rainfall. The alfalfa was stunted, and the blooms so short that the bees could reach the honey; therefore a good crop of honey and seed was produced from first crop. Our Buckeye valley was supplied with sufficient water from the underflow at the head of our canal system, so that our alfalfa was irrigated and was so rank that the bees got no honey from the blooms, and we received no seed nor honey from the first crop, but cut it for hay. Our second crop in the Buckeye valley, being produced at a time when it was warmer, with less irrigation water, yielded heavily in both honey and seed. Where water is plentiful many farmers ruin their seed and honey crop during the entire summer by over-irrigation, making the blooms so long that the bees cannot reach the honey. Red clover is the same way. B. A. Hadsell.

Maricopa County, Ariz.

Religion and Business. It is sometimes said that religion and politics will not mix, and that religion and business do not go well together. It would seem as tho much depended on how they are mixed. After reading A. I. Root's experience with hotel prices of lodgings, page 754, I was reminded of a story I heard not long ago. A merchant wishing to exert a wholesome influence over his clerks told them that after every sale they should repeat a passage of Scripture. One day a woman came into the store inquiring for a certain kind of dress goods. A clerk showed her a sample that had sold for $2.00 per yard. She inquired if they would sell it for six dollars per yard. The clerk said they would, and completed the trade. The clerk reported his sale to the proprietor. "Did you repeat a passage of Scripture after the sale?" was asked. He certainly had. "What was it?" "She was a stranger and I took her in."

Middleburg, Vt. J. E. Crane.

A Reliable Formula for the Prevention of Stings.



At the Franklin County Beekeepers' convention held at Columbus April 14, Prof. J. H. Diebel of the Columbus schools, among other good things, gave this formula which, if followed to the letter, will absolutely prevent stings: First, do not sit down on a bee; second, do not let the bee sit down on you.

GLEANED BY ASKING

Geo. S. Demuth

QUESTION.—What is your opinion of using inch starters or half sheets of foundation in extracting supers?

Oscar Nelson.
Wisconsin.

Answer.—This is not advisable, because when only inch starters or half sheets of foundation are used in the supers, the bees build chiefly drone comb. When drone combs are used for extracting combs, if no queen-excluder is used, the queen usually lays drone eggs in them; and, if the queen-excluder is used to prevent this, the bees usually leave many cells vacant, apparently expecting the queen to come up to lay drone eggs in them. In extracted-honey production, at least, the first super given should contain worker combs, because it is usually desirable to permit the queen to have a free range thruout the hive early in the spring. Later, after the queen has been put below the excluder, drone comb is not so objectionable in extracting supers, especially if they are far enough above the brood-chamber so that the bees do not leave cells vacant.

DO QUEEN TRAPS HINDER WORK OF BEES?

Question.—Is it advisable to use the wire queen trap to put on the hive before swarming, or will it interfere too much with the coming and going of the bees? W. R. Thorpe.
Ohio.

Answer.—If the queen trap is on the hive only during a week or ten days there will probably be no noticeable difference in the amount of honey gathered by the colony. Even when left longer it may not make much difference; but, of course, thoretically at least, the colony is better off without any obstruction over the entrance. Clipping the wings of the queen to a large extent accomplishes the same purpose as a queen trap; but, when swarms issue during the absence of the beekeeper, clipped queens are frequently lost by returning to the wrong hive or thru some other accident.

SWEET CLOVER IN WHITE CLOVER REGION.

Question.—Does the introduction of sweet clover into white clover territory reduce the quality of the honey gathered in this location?
Kansas. F. E Poister.

Answer.—Much depends upon the preference of the individual who eats the honey. Some prefer straight white clover or white and alsike clover, while others may prefer a blend containing some sweet clover. Buyers are usually willing to pay a little more for straight white clover or white and alsike clover honey than for either straight sweet clover, or a mixture of sweet clover and white clover.

Sweet clover is apparently at its best as a honey plant outside of the best white clover territory. Immediately west and south of the region best suited to white and alsike clover and in the irrigated districts farther west, sweet clover is now furnishing large quantities of honey of excellent quality. Within the white clover district proper the introduction of sweet clover may result in honey from the two sources being mixed; but usually if white clover yields well there is but little if any mixing until near the close of the season, and the beekeeper can often extract this separately.

QUEENS MATED IN UPPER STORY.

Question.—Suppose I lift the back end of the cover at the close of the main honey flow and put a good ripe queen-cell in every super, would the young queen mate and go back into the super without swarming? Jack Walterhouse.
Ontario.

Answer.—Yes, in many cases at least, especially if a frame of sealed brood is placed in the super when the ripe queen-cell is given, or shortly before. Soon after the close of the honey flow, however, these young queens may disappear, or the old queen below may disappear. When more is learned about the conditions necessary for the successful mating of queens in an upper story above a queen-excluder, while there is a queen in the brood-chamber below, it may become a useful method for requeening full colonies at the close of the main honey flow.

ITALIANIZING WITH VIRGIN QUEENS.

Question.—Would buying virgin queens give satisfaction where one wants Italian stock exclusively for honey production?
Iowa. Lawrence E. Molgard.

Answer.—The introduction of virgin queens of pure Italian stock would not result in pure Italian workers if the drones in your apiary and your neighborhood are blacks and hybrids, for these virgin queens would, of course, mate with drones from your own vicinity. The drones from these mismated Italian queens would be pure Italians, however, and by requeening again with pure Italian virgin queens the following year, the chances of pure mating would be greatly increased. It is difficult, however, even for an experienced beekeeper, to introduce virgin queens that are more than three days old.

TREATMENT FOR SACBROOD.

Question.—Please tell me how to cure sacbrood. Will changing the queen help?
Virginia. Henry W. Weatherford.

Answer.—Sacbrood usually disappears during the season without treatment, especially if the colony is strong and has a vigorous queen. While this disease sometimes greatly weakens the colonies and may in severe cases even prevent them from storing surplus of honey, it is best simply to see that the afflicted colonies have plenty of stores at all times as well as a vigorous queen.

CONDITIONS FOR BUILDING WORKER COMB.

Question.—Under what conditions will bees best build worker combs? M. W. Millard.
Tennessee.

Answer.—If full sheets of foundation are not used, there are two conditions under which bees may be expected to build worker combs. (1) Very weak colonies having only two or three frames of brood can be induced to fill frame after frame with worker comb from inch starters only by removing all but two of their combs and giving them one frame at a time during the honey flow. The principle is useful in having combs repaired which have holes in them; for these nuclei will fill the holes with worker comb, while a larger colony would almost invariably fill the holes with drone comb. (2) Just after a swarm has been hived the bees will build worker comb for the first few days, unless the queen is old or failing. If only five or six frames containing inch starters are given to a newly hived swarm, the remaining space being filled with division boards, a newly hived swarm having a queen not more than a year old, will usually fill these frames with worker comb; but, if more frames are given, the outside ones, and perhaps the ends of the middle ones, will contain drone comb.

When full sheets of foundation are used, better combs can usually be secured by having them built out in an upper story during a good honey flow.

ITALIANS AND EUROPEAN FOUL BROOD.

Question.—Do you consider that certain strains of Italian bees are really immune to European foul brood, or do you believe that the disease is eradicated by strong, vigorous colonies on account of their being able actually to carry all the infested material from the hive? D. D. Stacy.
Ohio.

Answer.—Italian bees are not immune to European foul brood, as may easily be demonstrated by placing combs containing this disease in a hive containing a weak colony of Italians. If the colony chosen is too weak to clean out the infested material thoroly, the disease will spread to other combs. Apparently strong colonies of Italians are able to overcome European foul brood by their thoroness in disposing of the dead larvae and pupae and cleaning out the cells. The two important factors in the eradication of European foul brood are a good strain of Italian bees and strong colonies, that is, strong in the spring.

QUEEN-EXCLUDER TO CONTROL SWARMING.

Question.—If I should place a queen-excluder underneath the brood-chamber and leave it there during the swarming season, what would be the result as to swarming? P. R. Morlan.
Indiana.

Answer.—After the prime swarm has issued and returned two or three times the bees would give up further swarming until the young queens begin to emerge a few days later. Then if none of the young queens succeed in escaping thru the queen-excluder, they would attempt to swarm every day or two until no unemerged young queens remain, and all but one of them have been killed. If the queen-excluder is not then removed to permit the surviving young queen to go out to mate, she would finally disappear, probably worried to death by the workers. The colony would then be hopelessly queenless. In the meantime such colonies, having the swarming fever thruout most of the honey flow and wasting much time in many unsuccessful attempts to swarm, would do little work in the supers. A queen-excluder can be used, as you suggest, to prevent an unclipped queen leading off a swarm while the owner is away, but to leave it in place thruout the swarming season would give very poor results.

ORIGIN OF BEE DISEASES.

Question.—In the April issue, page 203, you say the cause of the two most destructive brood diseases is positively known, the cause of American foul brood being a specific germ, *Bacillus larvae*, and the cause of European foul brood being an entirely different germ, *Bacillus pluton*. Now I ask what causes this germ? A. Beckard.
Missouri.

Answer.—The germs which cause the two brood diseases are minute plants, too small to be seen with the naked eye, but can be seen by means of a microscope. You are asking a hard one when you ask what causes these microscopic plants, or where they come from. No one knows any more about the origin of the microscopic plants than is known about the origin of any other plants. It is known, however, that it is impossible for a colony of bees to have American foul brood, unless some of the spores of the microscopic plant called *Bacillus larvae* are in some way carried into the hive and fed to the young brood. Likewise it is impossible for a colony of bees to have European foul brood unless some of the germs *Bacillus pluton* are in some way carried into the hive and fed to the young larvae. The disease is carried from colony to colony by robbing, by drifting bees, by the bees obtaining honey taken from diseased colonies, or by the beekeeper giving combs or other material from the hive of a diseased colony to a healthy colony.

UNITING SWARMS WITH ESTABLISHED COLONIES.

Question.—What do you think of hiving swarms (that one could buy) in with full colonies of bees to increase the population of the colony, thereby increasing the production of honey?
Iowa. M. E. Zbornik.

Answer.—Unless there is a good honey flow at the time, the bees of the two colonies may fight and many of them be killed when a swarm is hived in with an established colony, but sometimes this may be done without any fighting. Another objection to this plan is that, if the established colonies are already of normal strength, the addition of the swarm would probably result in these abnormally strong colonies immediately preparing to swarm. This plan might be used to strengthen colonies that are not strong enough to work in the supers, if conditions are favorable for uniting, but it should be used with caution.

TALKS TO BEGINNERS

Geo. S. Demuth

THE proper management of the bees during the active season depends so much upon the sources of nectar in the particular location that the beginner cannot manage his colonies intelligently unless he first learns when the honey flow may be expected. By consulting an experienced beekeeper of his neighborhood he may be able to obtain much valuable information concerning the chief honey plants of the locality and their time of blooming. He should also study carefully the list of honey plants mentioned in the standard books on beekeeping, for he should become acquainted with all of the more important honey plants of his locality and should know their relative importance as yielders of nectar. He will then be able to note the abundance of these plants this season and can watch their period of bloom to guide him in his management.

In some parts of the South the swarming season is already past and in many cases the early honey flow has already closed. Some localities in the South furnish later honey flows from which a surplus of honey may be expected. In fact, in many localities there may be a succession of honey flows from different sources, sometimes with an interval of a dearth of nectar between the honey flows; while in other localities these gaps may be closed, so the honey flow is continuous during a long period of time if conditions are favorable. In such cases the parent colony, as well as the swarm (see page 299, May issue), may be ready to store surplus honey during a later honey flow, and a super should be given to the parent colony as soon as it again becomes strong enough to need it, provided, of course, nectar is being gathered freely at that time.

In the North where swarming can usually be held back until the midst of the honey flow, the beginning of the main honey flow from white and alsike clover, which usually begins to yield some time in June, the parent hive usually does not need a super this season, for having been robbed of its field workers, which were added to the swarm as described last month, it usually recovers its strength too late to do much in the supers, unless the honey flow is unusually long. Sometimes, however, even in the North, these parent colonies will need supers three or four weeks after the swarm issued, if the honey flow continues.

Discouraging Swarming During Honey Flow.

In the North the beekeeper who has been able to coax his colonies thru the month of May without swarming, and also without running short of stores, has thus far managed well. By good management from now on he may be able to induce them to work ahead full speed thru the season without swarming in many cases, even when producing comb honey. This is done largely thru the management of the supers and keeping the colony comfortable. As soon as the honey flow begins, and sometimes even before, if the colonies are strong, the entrance should be opened to full size making it seven-eighths of an inch deep by the full width of the hive, and a wide shade board should be put on top of the hive to protect the supers from the direct rays of the sun. This board should rest upon cleats to form air space between itself and the cover and should project beyond the south side.

The first super should be given to each colony before the honey flow really begins. For extracted honey it should be given sometimes two or three weeks before the honey flow, but for comb honey it is usually given in the clover region about the time of the appearance of the first white clover blossoms in any great numbers. If weather conditions are favorable for nectar secretion from the clovers, the bees will probably be working in the first super thruout the North when this journal is mailed.

Tiering Up the Supers.

One of the most difficult problems for the beginner is the giving of additional supers during the honey flow at the right time and in the right place. Some seasons a single super will hold the entire surplus of honey and when this is the case it is better if no others are given. During other seasons it may require several supers to furnish room enough to hold all the surplus the bees can store during the season, and if they are not added as fast as needed, a large portion of the crop may be lost from want of room to contain it. Some seasons the honey may be stored so slowly that it may take the bees a month to fill one super, while during other seasons they may fill a super within a week, or even less. There is also a great difference between colonies of different strength. Even during a rapid honey flow it may take a weak colony a month to fill a super, while a strong colony can fill it within a week.

When the honey flow is slow or when the colony is weak, the bees usually begin work in the middle of the super, neglecting the outside portions. In comb honey supers, they may begin on a half dozen sections in the middle of the super, leaving the foundation untouched in the outside sections. Sometimes they even seal the sections of honey in the middle of the super before drawing out the foundation in the sections at the sides. In supers containing extracting combs they may begin on a few of the

combs in the middle of the super, leaving the cells in the outer portions empty until some of the honey in the middle has been ripened and sealed.

When this condition is found a second super need not be given until the foundation is drawn out in the outer sections of the comb-honey supers, or until nectar is found in the outside combs of extracting supers, and the second super should be placed on top of the first one. This is the management for either weak colonies or a slow honey flow.

On the other hand, if the colonies are strong and the honey flow is heavy the bees should draw out the foundation in the outside sections soon after beginning to work in those in the middle of the comb-honey supers, and should put nectar in the outside combs of extracting supers within a few days after beginning to store in the middle combs. When they do this a second super should be placed under the first before much honey has been stored in the first super, provided the weather continues favorable and the flowers promise well.

Following the same rule, additional comb-honey supers should be given just as fast as the bees will draw out the foundation in all the sections thruout the super, and for extracted honey an additional super should be given in each case as soon as the bees begin to store the incoming nectar freely in the outside combs of the super.

For extracted honey it does not matter so much if the supers are not completely filled when the season closes, tho it is better to have the season's crop within a few well-filled supers than to have the same amount of honey scattered thruout many supers. For comb-honey production it is very important that the expansion of super room shall not be too rapid, for this may result in many unfinished or poorly filled sections. The rapidity by which the bees expand their super work can be regulated largely by the position of each newly added super, hence the rule is to place the empty super under those already on the hive if the bees are storing rapidly, and on top of those already on the hive if they are storing slowly.

It will be well for the beginner to look into the supers every few days to note the progress being made and at the same time watch the progress of the blooming period of the honey plants, for sometimes without warning the honey flow may suddenly either be greatly increased or greatly decreased. The beekeeper must be prepared any minute to shift his supers to suit the needs, especially if producing comb honey, to avoid loss either by too many unfinished or poorly filled sections or by failing to supply room fast enough so that the comb-building can keep ahead of the honey gatherers.

When an empty super is placed on top, if the bees begin to work in it promptly, it may then be placed below if the honey flow is good. When the empty super is placed below at first and the bees fail to begin work in it promptly, it should be transferred to the top.

In order that the more advanced ones shall be well filled and the honey sealed more promptly it is a good plan to place the one that is nearest completion second above the brood-chamber, with the others arranged above it in the order they were originally given, the lightest being on top. (See Figs. 1, 2, 3, 4, Page 346-7.) When arranged in this way, if the flowers should fail unexpectedly, or the weather conditions become adverse for nectar secretion, the newly added super should be taken from its position below the others and placed on top, to hasten the completion of those which are nearest full and to induce the bees to carry the unsealed honey from the newly added super (now on top) to better fill the others.

Taking Off Finished Honey.

If comb honey is being produced the supers should be taken off just as soon as the sections of honey are sealed, for if they are left longer the surface of the combs may become darkened. This is more liable to happen toward the close of the honey flow or during a slow honey flow when the bees usually varnish over the surface of the cappings with propolis. Unless the honey flow is rapid it is not best to leave the supers on until all of the sections are completely sealed, for before those in the corner are sealed those in the middle of the super may become discolored. It is not possible to tell when a super of sections is finished by looking in at the top; but by standing the super on end and looking in below to see if the cells near the bottom of the section are sealed, one can usually tell whether the super is ready to be taken off.

The completed or nearly completed supers may be taken from the bees either by means of a bee-escape or by driving most of the bees out by smoke. If the bee-escape is used, place the super to be removed on top of the other supers but having a bee-escape board (with the bee-escape in place) between. Be sure that the escape-board is put on with the flat surface down, so there will be a bee-space between the board and the bottom slats in the super, and see that there are no bits of comb on the lower part of the super which would close the opening in the bee-escape when put in place. Also be sure that the cover fits down in place snugly, so there can be no chance for bees to get in from the outside. From 12 to 24 hours later nearly all of the bees will have gone down, and the super then removed.

If the supers are to be removed by smoking the bees out, remove the cover quietly; then smoke just enough to start the bees running down. By sending a puff of smoke down thru each of the openings between the sections most of the bees can be driven out, provided they are kept on the move so they cannot stop to fill themselves with honey.

BEES, MEN AND THINGS

(You may find it here)

SOME years ago 50 per cent of my golden Italian queens were lost in mating, while only 90 per cent of the blacks or hybrids were lost. The mortality of the golden Italian queens is two to one of the hybrids or black queens, during winter. Seven years ago I bought a golden queen in southern Iowa from which I raised many queens. I have never known any of that particular strain to cast a swarm, or to contract foul brood. However, about 70 per cent of the queens would die the first winter. One undersized golden queen stayed with me three summers. During all that time I never knew her to lay a drone egg. Her eggs would all produce workers whether laid in drone comb or not. Did any one ever observe the like? In the spring of 1917, one of my colonies dwindled for the want of feed. I gave them some pound sections, in order to save the queen; they hardly covered three sections, but they built up rapidly, and gave me a surplus of 28 lbs."—C. F. Wieneke, Linn County, Ia.

"There are only a few bees around here. Some of them are kept in grocery boxes, the frames made of lath, with no foundation. One man asked me how I killed my bees and asked me to look at his hives, which I did. He had three swarms which were kept in grocery boxes. I asked him about how much honey he thought was in the hives in which were the bees he wanted killed. He estimated not less than two gallons in each hive. I lifted on the hives. They had no supers, and I was sure that no two gallons was in them. I told him that I would give him the amount of honey that he thought was in the hives—clean, good-flavored honey, for the hives. He would not do it. He would rather kill the bees and squeeze the combs with the dead bees in them. I suppose he was afraid he would lose a few ounces of bad-flavored honey. I think his hives had no movable frames, and were not worth more than two gallons of honey. He had kept bees several years, and never got any honey. I wanted the bees, and thought it was a pity to kill the poor things. Box-hive beekeepers are funny things."—Edwin J. Dahlquist, Chisago County, Minn.

"Inclosed find $1.00 for Miller Memorial Fund. I wish I could have made it more, but have had hard luck with my bees. They were never in finer condition than they were this spring. However, last week two of my neighbors sprayed their apple trees when in full bloom, and, as a consequence, fully two-thirds of my bees are dead. These farmers were told again and again not to spray while trees are in full bloom—that if they did, it would kill the bees; but it was of no use. It was a pitiful sight to see the bees roll out of the hives and die, and the ground in the bee-yard was literally covered with dead and dying bees. The damage to me, figured at the lowest, is 500, besides the loss of the honey crop."—G. A. Barbisch Houston County, Minn.

One of my colonies swarmed on a very hot day and clustered on a tree. Realizing that I could not get a hive ready for an hour or so I immediately grabbed a large sack, climbed the tree, pulled the sack up over the limb and bees, and hived, or, rather, "sacked" the whole swarm. It was hot. I hung those bees in the woodhouse and worked away on the hives. An hour passed by, and then another. I had not thought of an airhole for the bees. When we finished the hive and frames two or three hours had gone by, and, to my surprise, when I turned down the sack in front of the hive most of the bees fell out, and there they lay, as dead as Hector. I had not thought the sack close enough to smother the bees, but that was exactly what happened. I lost the bees but gained the experience.—A. C. Kerley, Supt. of Schools, Burke County, N. C.

"On account of the bad weather, the conditions in the South are not near so good as they were a month ago. I left an overabundance of honey on the hives last year; but, on account of the early warm weather, the bees are dependent mostly on what they can gather, and I expect where the bees were not in as good condition as mine there has been considerable loss."—J. M. Cutts, Maricopa County, Ala.

"Has the editor read those articles in the Farm and Home about sweet clover, and the favor it is gaining with farmers for soil improvement? I wish all beekeepers could read them, and realize what sweet clover may mean to the beekeeping industry."—Chas. W. Reed, Kings County, N. Y.

"Altho I never had any experience with bees I found the queen easily today without a single sting. Clover is very thrifty, and all indications lead me to believe that the crop of honey will be large."—Merle L. Walradt, Chautauqua County, N. Y.

"One thing I want to tell you is that we have not had any white clover for three years, but we have a grand prospect for it this coming year."—Thos. McNallie, Jasper County, Mo.

"My annual white sweet clover is white with bloom, and the bees are working it."—C. E. Smith, Caddo County, Okla.

JUST NEWS

Editors

A BEEKEEPERS' chautauqua and Field Meet is announced for August 15 to 20 at Chippewa Falls, Wisconsin. The Wisconsin State Beekeepers' Association will hold a meeting in conjunction with the Chautauqua on August 19. This will be the third annual Chautauqua held in Wisconsin, the two previous meetings being held on the grounds of the University of Wisconsin at Madison. These summer meetings have been well attended and greatly enjoyed by Wisconsin beekeepers, their success being largely a result of the energetic work of Professor H. F. Wilson and his associates.

* * *

It is reported that the appropriation for the control of bee disease in Florida has been reduced to one-fourth the amount which was formerly available for this purpose. If this is true, it will be a serious handicap for this work in that State.

* * *

A fund of $4,000 has recently been appropriated by the legislature of Ontario for establishing a queen-rearing apiary, and additional funds are expected for its maintenance. The main purpose of the Ontario Government in establishing this queen-rearing apiary is to furnish Ontario beekeepers an improved stock of bees for the control of European foul brood.

* * *

A. E. Lusher of Pomona, California, reports that some of the orange growers in parts of Southern California sprayed the orange trees while in full bloom this season, which has resulted in whole apiaries being rendered unfit for honey production by the loss of their field bees. This practice, if continued, will be a severe blow to the beekeeping interests of this region.

* * *

The annual short course in beekeeping at the Ontario Agricultural College will be held June 13 to 17. This course deals with the practical phases of beekeeping and is offered to all those desiring to gain experience along this line. It is expected that Geo. H. Rea of New York and Prof. Kindig of Michigan will assist in giving this course.

* * *

A bill was introduced in the Territorial Legislature of Hawaii for the purpose of preventing all persons from keeping bees who do not control the surrounding country from which the bees secure the nectar. Apparently the bill was intended to give to certain persons the exclusive use of the bee pasture in territory under their control. A later report states that the bill was defeated in the legislature.

Dr. E. F. Phillips, chairman of the Bureau of Research of the American Honey Producers' League, has named Dr. J. H. Merrill, Manhattan, Kan., and Prof. H. F. Wilson of Madison, Wis., as his committeemen: Clifford Muth, chairman of advertising committee, has named A. L. Boyden, Medina, O., Wesley Foster, Boulder, Colo., C. H. W. Weber, Cincinnati, O., Dr. Ernest Kohn, Grover Hill, O., as his committeemen.

* * *

The early honey crop is reported to be almost a complete failure in portions of North Carolina, Virginia, and Maryland. Cold weather and continued rains occurred in this region just after the beginning of the honey flow.

* * *

The Yazoo Delta Beekeepers' Association will hold a field meeting at the apiary of W. W. Worthington, Wayside, Mississippi, on June 15. This new association is a live one, having been formed purely for business reasons, their main projects being the marketing of honey and the eradication of bee diseases.

* * *

The spring report of beekeeping in Ontario arranged by Prof. F. Eric Millen, Provincial Apiarist, is made up of 375 reports from 49 counties and represents 19,473 colonies spring count. The report shows the crop prospects from fair to extra good. A winter loss of 2.3 per cent as compared with 21 per cent for last year and 50,367 pounds of honey still in the hands of the 375 producers reporting.

* * *

The Bee World, published by the Apis Club, Port Hill House, Benson, Oxon, England, has combined its numbers for October to April in a single journal, thus giving in one issue a vast amount of excellent material. The Apis Club has recently made a wonderful growth, now having 32 affiliated societies representing altogether an aggregate of more than 11,000 beekeepers. A. Z. Abushady is secretary of the Apis Club as well as editor of the Bee World.

* * *

The new Department of Agriculture which has been formed by a recent act of the State Legislature of Michigan will assume control of apiary inspection in that State on July 1. Of the 14 departments which have to do with inspection of various foods, animals, and plants of the State, four bureaus are to be formed. The work of apiary inspection will go under the Bureau of Plant Industry. This bureau will include, along with apiary inspection, the inspection of nurseries and two other minor projects.

Go ye into all the world and preach the gospel to every creature.—MARK 16:15.
Thou shalt not kill.—EX. 20:13.
Shall not the Judge of all the earth do right?—GEN. 18:25.

A FEW days ago the closing part of an old hymn that I think I heard sung in my childhood some 75 years ago, came to mind. It was like this:

"The heathen in his blindness
Bows down to wood and stone."

During the years that have elapsed since then, much has been done for the heathen, especially in the line of our first text; and these heathens we think of mostly as in foreign lands. But, oh dear me! some events of a recent date cause me to inquire if there are not some heathens right here in the United States that are afflicted with a more awful "blindness" than even those in the most remote parts of the face of the globe. And sadder still, the heathenish work that has been going on (*some* of it at least) has its origin away up near the head of our government. What I have especially in mind just now is the decision of Attorney-General Palmer when he declared that "beer is a medicine." Is it possible that he was ignorant of how this matter has been thrashed out in years past, and decisions reached by our physicians, and by the Pharmacopeia of the United States, that alcohol in its various forms is *worse* than useless as a medicine. And then in the same breath he suggests that *real beer* should be made especially for sick people, so that whenever any doctor in the United States decides that his patient needs beer he should give him a prescription. And then followed the "blind" and "heathenish" suggestion that to have it handy for "poor suffering humanity," it might be sold in our drugstores at the soft-drink stand.

The question now comes up, Was Mr. Palmer really *ignorant* of the work that has been growing and spreading ever since the Anti-Saloon League was started, and even before that? Is it possible that it was a surprise to him when a protest came not only from the doctors but from the drugstores? And while I write, the whole State of Ohio is made safe from this threatened catastrophe by legislation that effectually cuts off any such work as selling real strong bear to any individual who can persuade some doctor that beer—that is, the old-fashioned beer—is the thing he needs to make him well.

I might add that Mr. Palmer furthermore suggested that special breweries should go to work and make beer for "sick folks"—the very kind of beer that our whole nation supposed was effectually ruled out. And, if I am right, while I dictate these words one or more breweries are *under way* to make beer for sick people. Did Mr. Palmer really know no better than to make the above ruling just before he stepped out of office? Or is it possible that the great breweries and the liquor people, with millions of money, had something to do in the way of biasing his judgment?

In these Home papers I have had something to say about the good farmers who volunteered to give corn, free of charge, that they grew last year by their hard work. I think that at first I mentioned they had contributed twenty millions of bushels; but after the ball started rolling the amount went up to thirty, forty, and finally, fifty millions, and just now I do not know how much more. Why did they do it? My impression is that it came about because there are a good many people in this land of ours who begin to recognize what the dear Savior said about laying up treasures on earth where "thieves break thru and steal.") Well, it occurs to me even in these latter times do *still* "break thru and steal." Well, it occurs to me that these farmers decided it would not be a bad thing (when the price offered for their corn did not pay the price of growing), instead of holding it, to *give it* to the millions of starving Chinese or to those starving in other lands. It was getting time to prepare for another crop of corn. There is no room for it in their corneribs. So, instead of selling it at a ridiculous price, they decided to invest it in treasures in heaven where thieves *do not* break thru and steal. And just when I began to worry about getting the corn over to the Chinese, the railroads all came forward. Years ago we used to hear it said that "corporations have no souls." May the Lord be praised, however, that we have corporations in these latter times that do have souls; and I think that every railroad company in the United States came forward and volunteered, in consideration of the farmers giving their corn, that they would carry it to the sea coast free of charge. And the next thing on the program was to get it across the great water, where men, women, and children are starving. Right in this crisis our good old Uncle Samuel concluded it was about time for *him* to join in and also lay up *some* treasures in heaven. By the way, I wonder if the good farmers, railroad companies, and others connected in this won-

derful example before the world, had not some time in their lives read that promise in Malachi where the old prophet challenges the people by saying, "Prove me now herewith, saith the Lord of hosts, if I will not open unto you the windows of heaven, and pour out a blessing that there shall not be room enough to receive it."

Now, what I have been telling you above is certainly an evidence that, even if there is here and there an example of heathenish blindness, there are thousands of evidences that the people of the United States, and I hope the world at large, are on the road to "the kingdom of heaven" that the dear Savior talked so much about when he was here with us.

What I have been telling you above is in the line of saving life. The awful war we have just passed thru was a work of destroying life. I have talked to you about the League of Nations and the work on foot to stop cutting people to pieces and destroying life as a method of settling differences. What about this armament business —building men-of-war that cost, a good friend of mine said, $25,000,000, and after they were made, having the sad spectacle of seeing them going on to the scrap-heap *without ever being used?* And the saddest part of it is that you and I have to be taxed to furnish these millions to make ships and machinery to destroy the lives that God gave.

Some wise woman belonging to the W. C. T. U. said a few days ago that the text, "Thou shalt not kill," was going to be read, "Thou shalt not make *implements* to kill." Some good man or woman has suggested that there is only one nation on earth that could successfully fight the United States, and that is England. And then somebody *else* said that after the way we worked together with England during the recent war a sort of brotherhood had been established that would effectually prevent for *all time* any more wars between America and England. These two countries in times past have suffered somewhat from strained relations as to which should be in the best shape in the way of naval equipment for invasion. With England and the United States united, since what has happened to Germany, there is no probability nor hardly a possibility that any nation on earth would presume to declare war against us. Well, while I was thinking of that old hymn about the heathen in their blindness I was wondering if it was not a little heathenish to keep on investing untold millions in preparation for some future war. May the Lord be praised that both America and England, and, I trust, other nations, have already cut down their appropriations for future armament.

Since I wrote that Home paper about remembering the Sabbath day to keep it holy, perhaps half a dozen kind friends have written that I overlooked the sad fact (?) that the greater part not only of the people of the United States but of the whole world were having Sunday on the wrong day. It should be Saturday instead of Sunday. Now please do not feel hurt, dear friends, if I suggest that these good people are also guilty of "heathenish blindness" in thinking that the world would be made better by having Sunday on Saturday. Those who have had Gleanings for the last 50 years will recall that about once in 10 or 15 years I have taken this matter up. Now, I think I am right, and I think the good people of the world will stand by me when I say this talk about the first day and the seventh day is all folly, and I hope to be able to prove it in a few words. To me it looks as if there were no first nor seventh day. The argument I bring forward and have urged for the last 40 years or more is briefly this: One or more islands of the sea were settled by people from two different directions, and both were exactly right in deciding what day was Sunday. But they had two different days. They could not do otherwise, and therefore it was impossible for them to decide which day was the first and which was the seventh. In fact, I have challenged our Advent friends on this during all these years, and I also called their attention to the fact that for many years no one ventured to rise up and reply in regard to the island argument. Finally one good woman said something like this:

"Mr. Root, were I over on that island where they can not decide as to the Sabbath, I would find out which side had the most followers, and then I would take the opposite."

That is, she would make her decision by being contrary. Would that be Christian-like?

Well, now, here is something further: In my recent visit to Battle Creek, Mich., I took the liberty of saying to Dr. Kellogg that I could with all my heart approve of all their work except that one thing of thinking that the world would be benefited by putting everything out of joint and having Sunday on Saturday. Just now I can not remember the precise words Dr. Kellogg used; but they were something like this:

"Mr. Root, I forgot to tell you that *I* have backslidden, gone back, and have been for several years in favor of the day usually accepted as Sunday."

I arose and took him by the hand and said:

"Doctor, can I say 'praise the Lord' for this news?"

He replied, "Yes, Mr. Root, say 'praise the Lord' if you choose."

It has long been a wonder to me that a man of such great skill and intelligence with such world-wide reputation, could continue to put himself "out of joint" with the rest of the Christian people of the whole wide world.

I told you I have had something like half

a dozen letters; and these good friends have tried to influence me by quotations from the Scriptures. But I have not looked up their quotations. It would take a lot of time, and it would not make a particle of difference. I have looked them all up in years past. I can not for one moment believe that the dear Savior, or that the great God himself, would think of such a thing as asking or commanding us to indorse anything so idiotic as to change our present Sunday to Saturday. "Shall not the Judge of all the earth do right?" Every one of the ten commandments, and everything advocated by the dear Savior, has some plain, clear reason for its making the world better. Consider for a moment. There are just now millions of starving people in this world of ours. While the great work is going on of conveying the food to the hungry, and saving life, and while the nations of the earth are in a Christlike way meeting this tremendous problem, shall we stop to argue about what day of the week shall be Sunday, when it is an *utter impossibility* to have the same Sunday on the day and hour all over the face of this mighty earth.

May God abundantly bless what I have said in the effort to make mankind better; and whatever may be your own private belief and convictions, dear friends, may what I have said or tried to say not make things worse, instead of better, with *any* poor, struggling soul.

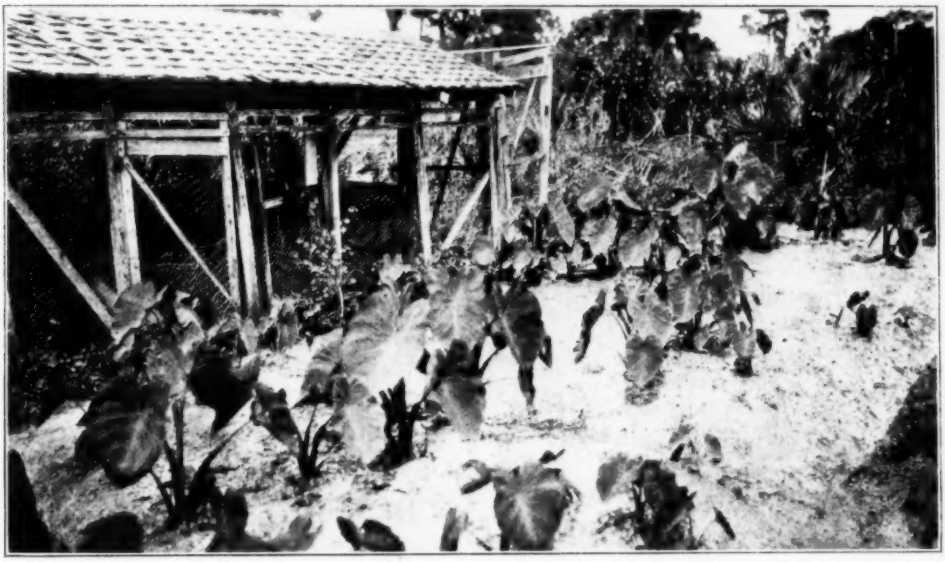
RUNNING CHICKENS THRU AN UNDERGROUND TUNNEL; SOMETHING ABOUT THE DASHEENS.

Around our Florida home, in the center of our group of poultry yards which I described and pictured some time ago, there was one yard that the chickens had scratched over and over and fertilized with their droppings until it was very rich, and I wanted to try it for a crop of potatoes; but in order to do so it was desirable to remove the chickens from their roosting house, where they had both food and water, so I took them off the roost at night and moved their feed tub and watering trough into another house. Well, that suited *me* all right, but not so with the biddies. They made me think of the old couplet,

> A woman convinced against her will
> Is of the same opinion still.

They showed by their actions that nothing would take the place of their old accustomed domicile. When they wanted water or feed they must have the old metal tub and dropping water; and when any one of the biddies was ready to lay she seemed almost frantic, and kept trying, by some hook or crook, to get back to the old place. But I could not think of any other way to accommodate the biddies and myself both, but by making an underground tunnel as shown in Fig. 1. I made it of old boards partly, and of one-inch poultry netting. You see if I made a *lane* such as they have on farms for horses and cattle I would have to open and close two gates when I wanted to cross said lane. Well, in this underground tunnel there is a spot where I wanted often to go back and forth. Here I made a little wooden bridge to walk over. A great big clump of dasheens at the left of the pictures hides this bridge. You will notice the gate near it, at the top of the cut. Would the chickens accept the tunnel? When I first introduced them to it I sprinkled corn along the runway, and they were delighted to get back to their old home. The hens cackled, the rooster crowed, and in a little while they would dart back and forth on a brisk run. Well, the tunnel accomplished another purpose that I did not count on, as has often happened with my experiments. There is a lot of stuff in the garden close by in the way of trimmings from lettuce, turnips, radishes, cabbage, and other stuff that the hens are very fond of. But if you throw loose leaves on the ground the chick-

The "biddies" in their underground runway.



The volunteer dasheen after the potatoes were dug, and which came up among the potatoes.

ens can not take off a bite, for the leaf must be fast on something. But as this stuff is dumped on the one-inch poultry netting, or up against it, they will greedily take every scrap of it by snipping off fragments just right to swallow. The thing worked to perfection all winter.

Let me say here that the best ration for chickens to make them lay I have ever found is small potatoes—too small to be sold even as seconds—mashed up while boiling hot, and mixed with middlings. We have 13 hens, *some* of them several years old. But 10 to 12 eggs a day is a common thing for them. We had all the eggs all winter that a family of three could use, and quite a few were sold at the grocery.

Fig. 2 gives you another glimpse of this poultry yard. After I had grown and sold a fine yield of Red Triumph potatoes, the dasheens came up as a volunteer crop. In fact, they were growing up among the potato vines long before the potatoes were fit to dig; and they had no cultivation except to avoid hurting them when digging. No dasheens had been grown on that special plot of ground, and so I can not really tell how they came there.

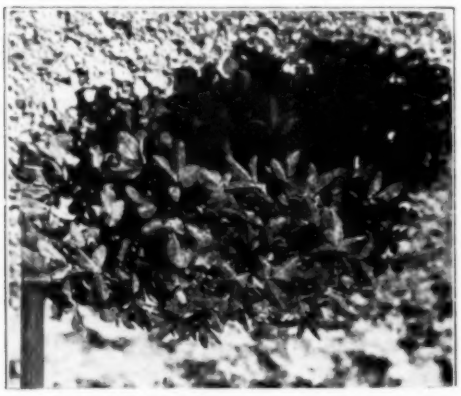
Fig. 3 gives another glimpse of a part of the same yard. A single clump of dasheens had been allowed to grow there for two or three years. I think I have told you I once got a heaping half-bushel of dasheen tubers from one hill. *This* one hill would certainly make a heaping *wheelbarrowful*. While the artist was taking the

One hill of dasheens that will probably give a heaping wheelbarrowful.

picture I reached in the clump and drew out a dasheen about the size of a quart fruit-jar. The women folks made a dasheen soup of the stalks and leaves from this tuber, and then they pared the tuber by some little work; and the paring, the cooks claim, is one objection to the dasheen. This big tuber was baked whole, keeping it in the oven a long time, and I had a slice of it for my dinner. I pronounced it away ahead of any Irish or sweet potatoes. In fact, it was more like a roasted chestnut than anything else I know of. It was not only the most delicious and nourishing of anything in the potato line, but I believe it was *almost* as delicious and appetizing as anything that God in his great goodness, to the children he loves, has furnished us for "our daily bread."

THE NEW ANNUAL SWEET CLOVER.

I have been thinking for some time that we need a shorter name for this new clover; and I was much pleased when I found that a new name had been adopted—"hubam." The "hu" comes Prof. Hughes, and the "bam" from Alabama, the place where it was first found. Well, just now a new feature of this new annual is being reported from different parts of the United States—mostly but not altogether from the States further south. If sown late in the season, and especially where the winter is mild, it will start up again in the spring. I kept sowing seed occasionally last summer—perhaps as late as July; and among the late-



A clump of "Hubam" clover that started up in the spring. Photographed May 9.*

sown plants about a dozen have started up this spring. I give you a picture of one of them. Some of the plants that have started up show plainly there is no mistake about it, for the old stalks, sometimes nearly as large as a hoe-handle close to the ground, still have the hard dry woody stalk in the center of the clump. The mild winter here in Ohio probably has had something to do with it. But here is another thing:

Burbank and others have suggested that the plant shows a great disposition to sport. While some plants shoot straight up, others spread over the ground like a vine, and still others have peculiar characteristics. Burbank suggests that much can be done, probably, by developing special plants.

Below is a clipping indicating the great height and tremendous spread of a single plant that this clover may make.

HAS CLOVER THAT'S NINE FEET HIGH.

Ames, Iowa.—Clover 10 feet high has been grown by C. E. Honkomp of Ashton, Iowa, from seed discovered by accident by the Iowa State Agriculture College in 1916 and developed there for distribution. Another Iowan who grew clover from the same seed had stalks 9 feet tall, that had to be propped up to keep them from breaking with the weight of blossoms and bees.

Just think of it! one little clover *seed* in three or four months will produce a clover like the above. Now if the plant from one little seed will do so much, what may be expected from a plant, such as I have pictured, in place of the tiny seedling? I can not give credit to the source of the clipping, for none was given me.

By the way, we still have seed to give away to our subscribers; and I am glad to tell you we have a better supply than we have had heretofore, so we can give you a little more than the small pinch we have been sending out.

If you want a larger quantity of the seed, see advertisement of the Fields Seed Co., page 390.

THE ANNUAL SWEET CLOVER.

My first experience with growing the annual sweet clover began last April, when I purchased a package of seed from A. A. Berry's Seed Co., Clarinda, Iowa, from which the plant described a few lines below was raised. I mixed the seed with biennial sweet clover seed, and sowed in black waxy soil in the latter half of April. For some weeks after the seed came up I could not see any difference in the growth. But later the annual began to shoot up and make rapid growth over the biennial. One plant started blooming about Sept. 1, when it was 7 feet in height. On Sept. 13 I measured it again, and its height was 8½ feet. No manure or fertilizer was applied to the soil except a little lime. Oct. 18 I commenced clipping off the seed stems as they ripened; they averaged 6 to 9 inches in length. From Sept. 13 to Oct. 24 it was extremely dry; as a result the plant made very little growth, but had some bloom at this date, when I took some measurements of main stock and branches. The stock was 9 feet high, 1¼ inches in diameter at base of plant. It gave off 12 branches, the first at 4 feet 6 inches and the twelfth at 5 feet 10 inches. Every seed stem was well filled. It is a wonderful plant for hay pasture as well as for enriching the soil, by plowing under in July. But its greatest value to the beekeeper is in the late bee pasture. It is better than buckwheat, as it lasts longer and produces better honey. The bloom of the biennial is practically past before it begins, but its last bloom is a feast for the bees up to freezing weather.

H. Zinn.

Pataskala, O., Nov. 15, 1920.

*Another picture in next issue will show growth the plant makes in 30 days.

Classified Advertisements

Notices will be inserted in these classified columns for 30c per line. Advertisements intended for this department cannot be less than two lines, and you must say you want your advertisement in the classified column or we will not be responsible for errors. Copy should be received by 15th of preceding month to insure insertion.

REGULAR ADVERTISEMENTS DISCONTINUED IN GOOD STANDING.

(Temporary advertisers and advertisers of small lots, when discontinued, are not here listed. It is only regular advertisers of regular lines who are here listed when their advertisements are discontinued when they are in good standing.)

Bert Smith, W. L. Ritter, Gelser Bros., L. S. Griggs, W. E. Genthner, E. E. Lawrence, Dr. Chas. F. Briscoe, P. W. Stowell, B. F. Averill, R. Kramske, J. L. Leath, F. M. Morgan, A. R. Wilcox, A. J. Lemoine, Mrs. J. T. FitzSimon, Elevation Apiaries, Golden Star Apiaries, I. F. Miller, Schuyler Herschell Hall, R. V. Stearns, Marugg Co., O. S. Rexford, Baughn Stone, W. H. Laws, Van Wyngarden Bros., Weber Bros. Honey Co., Sheldon Mfg. Co., Mead Cycle Co., E. S. Robinson, Smith Typewriters Sales Co.

HONEY AND WAX FOR SALE.

FOR SALE—Honey in 5 and 60 pound cans.
Van Wyngarden Bros., Hebron, Ind.

FOR SALE—Fancy clover honey in 60-lb. cans.
Jos. Hanke, Port Washington, Wis.

FOR SALE—Choice clover-basswood blend honey in new 60-lb. cans. J. N. Harris, St. Louis, Mich.

FOR SALE—Choice clover extracted honey. State quantity wanted. J. D. Beals, Oto, Iowa.

FOR SALE—10 cases (120 lbs.) choice extracted clover honey at 15c per lb., f. o. b. Merritt.
J. H. Corwin, Merritt, Mich.

FOR SALE—Fine quality raspberry milkweed honey in 5-lb. and 10-lb. pails and 60-lb. cans.
P. W. Sowinski, Bellaire, Mich.

FOR SALE—2000 lbs. choice white clover extracted honey. State quantity wanted. Sample 20c, applied on first order. C. H. Hodgkin, Rochester, O.

FOR SALE—500 lbs. clover-basswood honey, 5-lb. pails, delivered, $1.00 pail. Special price on lot. One ton fall honey in 60-lb. cans. Quote best offer.
H. S. Ostrander, Mellenville, N. Y.

FOR SALE—Extracted clover honey, 15c per pound; amber and buckwheat, 12½c per pound; two 60-lb. cans to case. Amber in 50-gal. barrels, 10c per pound. H. G. Quirin, Bellevue, Ohio.

FOR SALE—Extra choice extracted white clover honey, put up in new 60-lb. cans and 5-lb. pails. Sample, 20c, same to apply on first order.
David Running, Filion, Mich.

FOR SALE—Clover, basswood or buckwheat honey, comb and extracted, by the case, ton, or carload. Let me supply your wants with this fine N. Y. State honey. C. B. Howard, Geneva, N. Y.

FOR SALE—White clover honey, almost water white. Put up in new 60-lb. tin cans, two to the case. Write for prices.
D. R. Townsend, Northstar, Mich.

FOR SALE—White honey in 60-lb. cans, sample and price on request. Also white clover comb, 24 sections to case. The A. I. Root Co., Inc., 23 Leonard St., New York City.

FOR SALE—Choice extracted honey in 5-lb. pails, 75c; 10-lb., $1.40; by the barrel of about 400 lbs., 10c per lb., f. o. b., Florida.
Ward Lamkin, Arcadia, Fla.

FOR SALE—Finest white clover extracted honey in 60-lb. cans. Price f. o. b. Holgate, Ohio. One can, $10.80, two cans, $20.00. 10 lbs. delivered to third postal zone, $2.50; 5 lbs., $1.25.
Noah Bordner, Holgate, Ohio.

FOR SALE—White honey, 15c a lb.; L. A. alfalfa, 14c, in two 60-lb. cans; Chilian in 165-lb. kegs, 10c; light amber honey in 50-gal. bbls., 80c a gal. Beeswax, 30c a lb.
Walter C. Morris, 105 Hudson St., New York City.

FOR SALE—Finest quality clover extracted honey in new 60-lb. tins at greatly reduced price to close out balance of 1920 crop. Say how much you can use and we will be pleased to quote you our lowest price. Address E. D. Townsend & Sons, Northstar, Mich.

HONEY FOR SALE—Immediate shipment f. o. b. N. Y., Calif. white orange, 60-lb. tins, 19c lb.; Calif. white sage, 60-lb. tins, 16c lb.; white sweet clover, 60-lb. tins, 14c lb.; Calif. L. A. sage, 60-lb. tins, 13c lb.; West Indian L. A., 60-lb. tins, 10c lb.; West Indian L. A., 10-lb. tins, 6 per case, 15c per lb. Hoffman & Hauck, Inc., Woodhaven, N. Y.

HONEY AND WAX WANTED.

BEESWAX WANTED—For manufacture into SUPERIOR FOUNDATION. (Weed Process.)
Superior Honey Co., Ogden, Utah.

BEESWAX wanted. Old combs (dry) and cappings for rendering. Also wax accepted in trade. Top market prices offered.
A. I. Root Co. of Iowa, Council Bluffs, Iowa.

WANTED—Shipments of old combs and cappings for rendering. We pay the highest cash and trade prices, charging but 5c a pound for wax rendered. The Fred W. Muth Co., Pearl and Walnut Sts., Cincinnati, O.

OLD COMBS WANTED—Our steam wax-presses will get every ounce of beeswax out of old combs, cappings, or slumgum. Send for our terms and our new 1921 catalog. We will buy your share of the wax for cash or will work it into foundation for you. Dadant & Sons, Hamilton, Illinois.

WANTED—Beeswax. We are paying 1 and 2c extra for choice yellow beeswax, and in exchange for supplies we can offer a still better price. Be sure your shipment bears your name and address, so we can identify it immediately upon arrival, and make prompt remittance.
The A. I. Root Co., Medina, Ohio.

FOR SALE.

HONEY LABELS—New designs. Catalog free.
Eastern Label Co., Clintonville, Conn.

FOR SALE—A full line of Root's goods at Root's prices. A. L. Healy, Mayaguez, Porto Rico.

ROOT'S goods at Root prices. A. W. Yates, 3 Chapman St., Hartford, Conn.

ROOT'S BEE SUPPLIES—For the Central Southwest Beekeepers. Beeswax wanted. Free catalog. Stiles Bee Supply Co., Stillwater, Okla.

BEEKEEPERS' SUPPLIES — Root's goods at factory prices. Send for 1921 catalog.
F. D. Manchester, Middlebury, Vt.

PORTER BEE-ESCAPES save honey, time, and money. Great labor-savers. For sale by all dealers in bee supplies. R. & E. C. Porter, Lewiston, Ill.

FOR SALE—200 new 10-frame Root hive-bodies with frames, all in flat. Were never uncrated. $340 takes the lot. Herbert Kietzer, Vernon Center, Minn.

FOR SALE—Hatch wax press, used three or four times, $12.00.
Ernest Ryant, Grosvenor Dale, Conn.

FOR SALE—"SUPERIOR" FOUNDATION, "quality unexcelled." Let us prove it. Order now.
Superior Honey Co., Ogden, Utah.

FOR SALE or on shares, 14 apiaries, one or all. Healthful location with American school and church in town, on stone road. Last crop over 40 tons. M. C. Engle, Herradura, Cuba.

FOR SALE — Good second-hand double-deck comb-honey shipping cases for 4¼ x 4¼ x 1⅞ sections, 25c per case, f. o. b., Cincinnati. C. H. W. Weber & Co, 2146 Central Ave., Cincinnati, Ohio.

QUICK queen-cager. Will run a queen in a cage in 10 seconds and not fumble her. 50c postpaid. Patent applied for. F. R. Davis, 203 Oak St., Weehawken, N. J.

FOR SALE—70 4¼ x 1⅞ beeway section-holders and slat separators, some used one year, some new. Mondeng make, $3.75. Woodman section fixer, good as new, $1.00. No disease. Irvin Nordgaard, Peterson, R. D. No. 1, Minn.

FOR SALE—Comb honey supers, complete, except sections, $1.00 each in lots of five; 10-frame for 4¼ x 1⅞ sections. Also a few used 8-frame hives in good condition at a bargain.
Ross B. Scott, LaGrange, Ind.

FOR SALE—Good second-hand empty 60-lb. honey cans, two cans to the case, at 60c per case f. o. b. Cincinnati. Terms, cash with order. C. H. W. Weber & Co., 2146 Central Ave., Cincinnati, Ohio.

FOR SALE—700 A grade 4 x 5 x 1½ plain sections, $11.00; 300 P fences for 4¼ x 4¼ plain sections, a few of which are slightly discolored by exposure to air, $16.00.
Miss E. J. King, McArthur, Ohio.

FOR SALE—90 twin-mating boxes, $75.00, f. o. b., Macon, Miss. These are first class, nailed, painted, and complete except foundation. No disease. Small frames, three of which fit in one Langstroth frame. Geo. A. Hummer & Sons, Prairie Point, Miss.

FOR SALE—Danzenbaker supers for 4x5x1⅜ sections complete with section holders and fences. For use on ten-frame hives. 15 nailed and painted and never used, 33 used two seasons but in good shape. No disease about. Will sell all crated for shipment at $1.50 each.
Miss E. J. King, McArthur, O.

FOR SALE—Owner wants use of outside warehouse. We must vacate and offer for quick sale: One-story 8-frame single-wall hives, per package of 5, $15.00; 10-frame size, $17.50. Staple-spaced frames, per package of 100, $9.00. 4 x 5 shipping cases with glass, per package of 25, $15.00. Goods first-class. Offer good only as long as this stock lasts. A. G. Woodman Co., Grand Rapids, Mich.

FOR SALE—45 10-frame hive-bodies, with Hoffman frames, new, wired and foundation imbedded, $2.60 each; 35 10-frame hives, complete, NEW galvanized covers, $2.00 each; 35 8-frame hives, air-spaced hives, "not new," with drawn worker combs, $2.00 each; 30 10-frame hive-bodies with frames nailed and painted, "NEW goods," $1.50 each; 25 comb honey supers, 75c each; 30 feeders, 10c each. Standard supplies. First class in every way. No foul brood combs. Most of these supplies never been on the hive. Reason for selling, going in other business. "This is a big bargain." W. J. D'Alliard, "Glenville Apiary," Amsterdam, R. F. D. No. 5, N. Y.

FOR SALE—One No. 18 Cowan reversible extractor with brake, new, has never extracted one pound of honey, $35.00; 25 10-frame Excelsior covers used but in good condition, 60c each, or the lot for $12.00; 25 10-frame comb-honey supers for 4 x 5 x 1⅞ sections, used, in good condition, all painted, $1.00 each, the lot for $20.00. Lynn Z. SilsLee, 20 Leonard St., Dansville, N. Y.

FOR SALE—50 Jumbo hives and 30 standard hives with metal and inner cover and reversible bottom at $2.00 each; 60 extracting supers for frames 6¼ in. deep at 50c each; 12 of each, 4¼ x 4¼ and 4 x 5 comb honey supers empty at 40c each; 12 4¼ x 4¼ comb honey supers with holders and separators at 75c each. All 10-frame size nailed and painted and in A1 shape, nothing over two years old. No frames or bees.
A. H. Hattendorf, Ocheyedan, Iowa.

BIG BARGAIN IN SECTIONS—We have an odd lot stock A and B grade sections not manufactured for our regular trade, size 4¼ x 4¼ x 1⅞. They compare quite favorably with Root Quality sections. We recommend both the A and B grades as a bargain. The A grade is strictly fine, and the B grade is quite as good except for color and imperfection. Stock limited and we urge quick action. A grade in crates of 500 at $7.65; B grade at $7.50. Available only in crates of 500. The A. I. Root Company, 224-230 W. Huron St., Chicago.

AUTOMOBILE REPAIRS

AUTOMOBILE owners should subscribe for the AUTOMOBILE DEALER AND REPAIRER; 150-page illustrated monthly devoted exclusively to the care and repair of the car. The only magazine in the world devoted to the practical side of motoring. The "Trouble Department" contains five pages of numbered questions each month from car owners and repairmen which are answered by experts on gasoline engine repairs. $1.50 per year. 15 cents per copy. Postals not answered. Charles D. Sherman, 107 Highland Court, Hartford, Conn.

WANTS AND EXCHANGES.

WANTED—Old combs and cappings for rendering on shares. Our steam equipment secures all the wax. Superior Honey Co., Ogden, Utah.

WANTED—To quote special prices on queen cages in quantity lots, to breeders. State quantity wanted. A. G. Woodman Co., Grand Rapids, Mich.

WANTED—Cowan extractor, pay cash. 100 Langstroth frames, $6.50, incubators, one-fourth price, exchange for gun.
Lorenzo Clarke, Winona, Minn.

MISCELLANEOUS

FOR SALE—New annual white sweet clover plants, 4 to 6 in. tall, 3 doz. for $1.00, prepaid.
C. S. Rhea, Hardyville, Ky.

FOR SALE—400 bushels buckwheat, $1.60 per bushel. New grain bags, 30c extra.
Albert Bues, Wharton, Ohio.

FOR SALE—25,000 pounds of scrap candy, 2½c per pound in barrel lots, about 200 pounds per barrel. Sterling Products Company, Evansville, Ind.

FOR SALE—1½-H. P. gasoline engine, good condition. Have windmill now. Price, $25.00, f. o. b., Coggon, Iowa. Edw. C. Heldt, R. D. No. 1, Ryan, Iowa.

SWEET CLOVER—Biennial yellow. Ideal for bee pasturage and soil improvement. New seed, recleaned and graded, unhulled, 8c per lb.
R. M. Hanna, Skillman, N. J.

HONEY, ROOTS, FURS—Beemen, why not increase your profits? A 32-page booklet describing books on Bee Hunting, Medicinal Root Growing, Fur Farming, Tanning, Trapping, etc., free.
A. R. Harding, Publisher, Columbus, Ohio.

FOR SALE—One Marlin 30-30 rifle, with telescope sights, $30.00; one K. W. Master vibrator for Ford cars, $5.00; one small Kelsey hand printing press, $5.00; one Ever-Ready Ford starting and lighting outfit, $30.00.
E. E. Lawrence, Doniphan, Mo.

SWEET clover combined huller and scarifier for hand use, one extra set of lining and two screens included, each $3.75, postage extra. Brass dropping tubes with tin funnel drop all kinds of small seeds on exact spot in windy weather without bending your back. Each, $1.00 postpaid.
S. Rouse, Ludlow, R. D. No. 2, Ky.

BEES AND QUEENS.

FINEST Italian queens. Send for booklet and price list. Jay Smith, R. D. No. 3, Vincennes, Ind.

SEE our large advertisement on page 386.
J. L. St. Romain, Hamburg, La.

WHEN it's GOLDEN, it's PHELPS. C. W. PHELPS & SON, Binghamton, N. Y.

FOR SALE—Italian queens and nuclei.
B. F. Kindig, E. Lansing, Mich.

PACKAGE BEES—Dependable Italian queens.
E. A. Harris, Albany, Ala.

HARDY Italian queens, $1.00 each.
W. G. Lauver, Middletown, Pa.

GOLDEN Italian queens, untested, $1.50 each; dozen, $14.00. E. A. Simmons, Greenville, Ala.

THAGARD ITALIAN QUEENS—See display advertisement elsewhere.

SIMMON'S ITALIAN QUEENS, bees and nuclei. Fairmount Apiary, Livingston, N. Y.

NOTICE—I am still in the queen business and solicit your orders. J. B. Marshall, Big Bend, La.

SEE our large advertisement on page 381 for prices. Buckeye Bee Co., Justus, Ohio.

PHELPS' GOLDEN QUEENS will please you. Mated, $2.00. C. W. Phelps & Son, Binghamton, N. Y.

BEES FOR SALE—50 select hives, absolutely healthy and in strong condition, $12.50 per hive.
The Fred W. Muth Co., Cincinnati, Ohio.

MY famous Italian queens, June 1 and later, $1.50 each, six for $8.00. J. W. Romberger, Apiarian, 3113 Locust St., St. Joseph, Mo.

IF you want queens that will produce results, give THAGARD'S ITALIAN QUEENS a trial.
V. R. Thagard, Greenville, Ala.

FOR SALE—Bright Italian queens, $1.50 each; $14.00 per doz. Ready after April 15.
T. J. Talley, Greenville, R. D. No. 3, Ala.

FOR SALE—Golden or three-banded virgins, 60c each, or $6.00 per dozen. Safe arrival.
R. O. Cox, Luverne, Ala., R. D. No. 4.

BEES AND QUEENS from my Carolina apiaries—progeny of my famous Porto Rican pedigreed-breeding stock. Elton Warner, Asheville, N. C.

PACKAGE BEES and PURE ITALIAN QUEENS. Booking orders now for spring delivery. Circular free.
J. E. Wing, 155 Schiele Ave., San Jose, Calif.

SELECT QUEENS only. Three-banded and leather-colored Italians. Tested, $2.50; untested, $1.50 each. Geo. W. Coltrin & Son, Mathis, Texas.

ITALIAN BEES in 8-frame hives and considerable extracting equipment for sale. No disease. Write wants. L. Mege, Pequannock, N. J.

FOR SALE—Golden Italian queens, 1 untested queen, $1.50; 1 tested queen, $3.00.
J. F. Michael, Winchester, Ind.

THAGARD'S ITALIAN QUEENS produce workers that fill the supers quick.
V. R. Thagard, Greenville, Ala.

FOR SALE—A few choice queens shipped in frame brood, $4.00 each.
Jes Dalton, Bordelonville, La.

CHOICE ITALIAN QUEENS—Three-banded and leather-colored. Tested, $2.50; untested, $1.50 each. Geo. W. Coltrin & Son, Mathis, Texas.

FOR SALE—Golden queens, untested, $1.15; 6 or more, $1.10 each; select untested, $1.60; 6 or more, $1.50 each; safe arrival. Hazel V. Bonkemeyer, Randleman, R. D. No. 2, N. C.

FOR SALE—Hardy Northern-bred Italian queens and bees. Each and every queen warranted satisfactory. For prices and further information, write.
H. G. Quirin, Bellevue, Ohio.

FOR SALE—Leather-colored Italian queens, tested, until June 1, $2.50; after, $2.00; untested, $1.25; 12, $13.00. Root's goods at Root's prices.
A. W. Yates, 15 Chapman St., Hartford, Conn.

IF GOOD bright Italian queens are wanted by return mail, send your order to M. Bates, Greenville, Ala. Price, $100 per 100. Pure mating, safe arrival, and satisfaction guaranteed.

FOR SALE—300 stands of bees in Standard hives, two-thirds equipped for comb honey and one-third for extracted honey. G. J. Westerik, Mt. Morrison, R. D. No. 1, Box 54, Colo.

JUST to let all my customers know I am still breeding three-banded Dr. Miller stock queens. One untested queen, $2.00; 6 for $11.00. Selects, 25c each higher. Curd Walker, Jellico, Tenn.

BUSINESS-FIRST queens, untested, $1.00 each; select untested, $1.75; tested, $2.25; select tested, $2.50. Safe delivery guaranteed, orders filled promptly. M. F. Perry, Bradentown, Fla.

BEES BY THE POUND — Also QUEENS. Booking orders now. FREE circulars giving details. See larger ad elsewhere. Nueces County Apiaries, Calallen, Texas. E. B. Ault, Prop.

FOR SALE—Golden or three-banded queens, untested only. Order now for shipment June 1 or later. One, $1.50; six, $8.00; 12, $15.00.
Ross B. Scott, LaGrange, Ind.

FOR SALE—Three-banded Italian queens, untested, $1.50 each; 6, $7.50; 12, $14.00. Select untested, $1.75 each. Satisfaction guaranteed. W. T. Perdue & Sons, R. D. No. 1, Fort Deposit, Ala.

FOR SALE—Select untested queens, $2.00 each; six for $11.00. No very large orders solicited. Ready about June 10th.
Dr. C. E. Shelden, Coeur d'Alene, Idaho.

ORDER booked now for delivery June 1, 3-frame nuclei and queen, $7.50; select tested, $8.50. Dr. Miller's strain. No pound packages. Low express rates and quick transit to north.
S. G. Crocker, Jr., Roland Park, Baltimore, Md.

HUMMER QUEENS—Untested, $1.50 each; $15.00 per dozen; tested, $2.00 each; $22.00 per dozen. A trial will convince you that they cannot be beaten. Safe arrival and satisfaction guaranteed. Nuclei at same old prices.
Geo. A. Hummer & Sons, Prairie Point, Miss.

FOR SALE—Golden queens ready May 1; 1, $1.50; 6, $7.50; 12, $14.00; 100, $100. Virgins, 75c each. W. W. Talley, Greenville, R. D. No. 4, Ala.

CAN FURNISH limited number 2-fr. nuclei with untested queen, $5.00 after May 15, receiver to return shipping boxes. H. S. Ostrander, Mellenville, N. Y.

FOR SALE—70 strong hives of bees, 1600 brood-frames, and lots of other supplies, $2000. Also 7-room house, all improvements, lot 125x125, $6500. A. H. Opfer, 6259 Patterson Ave., Chicago, Ills.

ITALIAN QUEENS OF WINDMERE are superior three-banded stock. Untested, $1.50 each; 6 for $8.00; tested, $2.50 each; select tested, $3.00. Prof. W. A. Matheny, Ohio University, Athens, O.

FOR SALE—Golden Italian queens, untested, $1.15; 6 for $6.50; 12 or more, $1.00 each; tested, $2.00 each; select tested, $3.00 each; extra select tested, $4.00 each. No bees for sale.
D. T. Gaster, Randleman, R. D. 2, N. C.

TO MY FRIENDS—I am still doing business at the old stand, and will have a fairly good supply of as good Italian queens as I ever produced. Untested, $1.50 each. Write me.
J. B. Hollopeter, Rockton, Pa.

FOR SALE—A limited number of leather-colored Italian queens. The kind that gets honey. L. C. Keet in 1919 produced 40,000 pounds of honey from 200 colonies. Geo. B. Howe, Sacket Harbor, N. Y.

PURE ITALIAN BEES—Not the cheapest, but the best we can grow, both golden and three-banded, with clean bill of health. Sure to please. Such as we use in our own yards. Untested, $1.50; tested, $2.50. J. B. Notestein, Bradentown, Fla.

DAY-OLD ITALIAN QUEENS—High quality, low price. Safe introduction described in circular. Delivery and satisfaction guaranteed in U. S. and Canada. Price, 1, 50c; 100, $50. Order early.
James McKee, Riverside, Calif.

FOR SALE—2-lb. packages Italian bees and queens by parcel post, postage paid, delivery April 15, for $8.50; 2-frame nuclei with Italian queen by express, not prepaid, delivery May 5, $9.00.
Otto J. Spahn, Pleasantville, N. Y.

FOR SALE—Bees for May and June shipment. Two pounds bees and an untested Italian queen shipped by express on drawn comb with stores. Certificate of health with each shipment.
Ross B. Scott, La Grange, Ind.

WE believe we have the best Italian queens obtainable. Our new system is working wonders. Book your order now for 1921. Untested, $1.50; tested, $3.00; virgins, imported mothers, 50c
F. M. Russell, Roxbury, Ohio.

WE are now booking orders for early spring delivery of two and three frame nuclei, with untested or tested queens. Write for prices and terms. We also manufacture cypress hives and frames.
Sarasota Bee Co., Sarasota, Fla.

1921 price of bees and queens from the A. I. Root Co. leather-colored stock. 1 lb. bees with queen, $5.00; 2 lbs., $7.50. Untested queens, $1.50 each; dozen, $15.00. Safe arrival. Orders booked now.
Greenville Bee Co., Greenville, Ala.

QUEENS—THE FAMOUS BRENNER strain of Italians. Equaled only by the best. Untested, $1.50 each; $15.00 per dozen. Tested, $2.50 each. Satisfaction guaranteed. Dr. A. Wright, Kingsbury, Texas.

ITALIAN QUEENS—Recognized honey-gathering strain, June 10 (a little earlier if possible) until close of season. Untested, each, $1.75; 6, $10.00; 12, $18.50.
R. F. Holtermann, Brantford, Ont., Can.

FOR SALE—Three-banded Italian queens, after May 25, untested, $1.50; 6, $8.00; 12, $15.00. Tested queens, $3.00 each. The above queens are all select. Robt. B. Spicer, Wharton, N. J.

FOR SALE—Unsurpassed Italian queens, ready June 1. Untested, 1, $1.50; 6, $7.50; 12, $14.00; 50, $55.00; 100, $105.00. Tested, 1, $2.50; 6, $13.50. My queens are actually laying before they are sent out. J. D. Harrah, Freewater, Oregon.

FOR SALE—Packages, nuclei, and pure-bred queens—queens from Root Home-bred breeders. Untested, $1.50; tested, $2.50; select tested, $3.00. Safe arrival and mating guaranteed. The Southland Apiaries, Hattiesburg, Miss. W. S. Tatum, Prop.

FOR SALE—Root"s strain of Golden and leather-colored Italian queens, bees by the pound and nuclei. Untested, $1.50 each; select untested, $2.00; tested, $2.50 each; select tested, $3.00. For larger lots write. Circular free.
A. J. Pinard, 440 N. 6th St., San Jose, Calif.

SHE-SUITS-ME queens, season of 1921. Untested Italians, $2.00 each, 10 or more, $1.75 each, from May 15 to June 15. After June 15, $1.50 each, up to nine queens; 10 to 24 queens, $1.40 each; 25 and up, $1.25 each.
Allen Latham, Norwichtown, Conn.

HAVING purchased leather queens from the best honey-gathering stock obtainable, we will rear a few three-banded queens in yards set apart for that purpose, at the following prices: Untested, $2.00; tested, $5.00; select breeders, $10.00. C. W. Phelps & Son, 3 Wilcox St., Binghamton, N. Y.

THREE-BANDED Italian only, that have been bred to a high standard of excellence. Never had disease in my apiaries. Safe arrival and satisfaction guaranteed. Untested queens, $1.50; 12, $15.00; tested queens, $2.25; 12, $25.00.
Jul Buegeler, New Ulm, Texas.

FOR SALE—Three-band Italian bees and queens, ready June 1. Fine stock, free from disease and guaranteed to please you. (One grade) select untested queens, $1.50 each; 6, $8.00; 12, $15.00; 50, $60.00. Nuclei, $3.00 per frame, Hoffman; bees, $3.00 per pound. A. E. Crandall, Berlin, Conn.

THREE-BANDED ITALIAN BEES and queens. Two standard Hoffman frame nuclei, with untested queen, $5.50; three-frame, as above, $6.50. Orders booked in rotation. All dead bees will be replaced. Can furnish government inspection certificate of no disease. L. C. Mayeux, Hamburg, La.

WHEN BETTER QUEENS are raised Victor will raise them. Three-banded Italians only, mated, $1.25 each; 6, $7.00; 12, $13.50; 100, $110.00. Tested, $3.00. Breeders, $10 to $25. Safe arrival guaranteed only in U. S. and Canada.
Julius Victor, Martinsville, N. Y.

ITALIAN QUEENS—Three-banded, select untested, guaranteed. Queen and drone mothers are chosen from colonies noted for honey production, hardiness, prolificness, gentleness, and perfect marking. Price, May and June, $1.50 each; 12 or more, $1.25 each. Send for circular.
J. H. Haughey & Co., Berrien Springs, Mich.

"QUEENS, QUALITY FIRST QUEENS." High-grade, pure, three-banded and golden Italians. These queens are as good as can be bought; are gentle, prolific, and good honey-gatherers. I guarantee safe arrival and satisfaction. Why not try these and be convinced? Untested, $1.25 each; 6, $6.50; 12, $12.50. Selected untested, $1.50; 6, $8.00.
G. H. Merrill, Pickens, S. C.

TWO-FRAME NUCLEI with untested Italian queens from the apiary of E. R. King, formerly inspector in Ohio and later in charge of Apiculture at Cornell University. No disease in territory. May delivery, $7.50; June, $6.50; July, $5.00; 50 per cent cash with order. If queen is not wanted, deduct $1.25 from above prices.
Miss E. J. King, McArthur, Ohio.

PHELPS' GOLDEN ITALIAN QUEENS combine the qualities you want They are GREAT HONEY-GATHERERS, BEAUTIFUL and GENTLE. Virgins, $1.00; mated, $2.00; tested, $5.00. Breeders, $10 to $20. Safe arrival guaranteed only in the U. S. and Canada.
C. W. Phelps & Son, Binghamton, N. Y.

FOR SALE—Italian queens, untested, in June: 1, $1.50; 6, $8.25; 12, $16.00; tested, $2.50 each. From July 1 to Oct. 1, untested: 1, $1.25; 6, $7.00; 12, $13.50; tested, $2.00. I have a tested breeding queen from the A. I. Root Co., and will breed queens from her for those that prefer them to my old strain of hustlers. Safe delivery and satisfaction guaranteed. R. B. Grout, Jamaica, Vt.

BEGINNING June 5 I can supply you with three-banded Italian queens by return mail. Select untested, $1.50 each, or $15.00 per dozen. Tested, $2.50 each. I also have nuclei for immediate shipment; 2-frame nucleus, $5.00; 3-frame nucleus, $6.50. Add price of queen wanted to price of nucleus. Frank Bornhoffer, R. D. No. 17, Mt. Washington, Ohio.

NORTH CAROLINA bred Italian queens of the Dr. C. C. Miller strain of three-band Italian bees. Gentle and good honey-gatherers. From May 1 until July 1: Untested, $1.50 each; $15.00 per doz.; selected untested, $1.75 each, $17.50 per doz.; tested, $2.25 each; $22.50 per doz., selected tested, $3.00 each. Safe arrival and satisfaction guaranteed. L. Parker, Benson, R. D. No. 2, N. C.

FOR SALE—Three-band leather-colored Italian queens of the J. P. Moore strain, hardy, prolific, hustlers, no disease. Safe arrival and satisfaction guaranteed. Prompt attention given all orders. 1 untested, $1.25; 12, $13.50; 1 select untested, $1.50; 12, $15.00; 1 tested, $2.00; 12, $19.00; 1 select tested, $2.50; 12, $25.00. Write for circular and further information. J. M. Cutts, Route No. 1, Montgomery, Ala.

FOR SALE—Three-banded Italian bees and queens for June delivery. All bees are shipped on a standard Hoffman frame of brood and honey, 2 lbs. bees with untested queen, $5.00; 3 lbs., same as above, $6.25; 2-frame nuclei with untested queen, $5.00. All dead will be promptly replaced if noted by agent on express tag. Can furnish state inspection health certificate of no disease.
C. A. Mayeux, Hamburg, La.

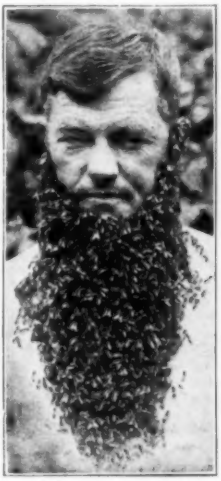
QUEENS—Three-banded Italians only. Now that the booking season for nuclei has passed, and while I have a large number of orders for nuclei, I shall not be too busy with these to fill your orders for queens, 1 untested for April, 1.25; 12, $12.50; 1 untested for May 1 to June 1, $1.00; 12, $10.00; I ship no queens after June 1; weather is too hot. Discount on large orders. Safe arrival guaranteed.
L. R. Dockery, Carrizo Springs, Texas.

FOR SALE—Bright Italian queens and bees, untested queens, $1.50 each; $15.00 per dozen; 1 lb. bees, $5.00; 2 lbs. bees, $9.00. If queen is wanted with bees add the price of queen. We guarantee safe arrival and reasonable satisfaction in U. S. and Canada. Cash or certified check must accompany the order for prompt shipment, unless parties are known or satisfactorily rated.
Graydon Bros., Greenville, R. D. No. 4, Ala.

PRITCHARD QUEENS (Three-banded Italians)—My first season selling direct to the trade. June prices: Untested, $1.75 each; 6 for $9.50; select untested, $2.00 each; 6 for $11.00. For delivery after June 30th, deduct 25 cents for each queen. A liberal discount will be given on larger quantities. I will have a few choice virgins, tested, and breeders to spare; write for prices. Queens clipped free of charge on request. Acknowledgment and directions for introducing sent on receipt of order. Safe delivery and satisfaction guaranteed. Specify date of shipment desired, otherwise orders will be filled in rotation. Arlie Pritchard, Medina, Ohio.

HELP WANTED.

WANTED—One experienced man and students, clean habits, able-bodied and willing workers, as helpers with our more than 1000 colonies. Opportunity to learn the business from A to Z. 1920 crop 122,000 pounds. Theory also. Write immediately giving age, height, weight, habits, former employment, experience, references, wages, photo, all in first letter. E. F. Atwater (former Special Field Agent in Beekeeping, U. S. Dept. Agr.), Meridian, Idaho.



Queens

Write for our catalog of high-grade Italian Queens. Pure mating and safe arrival guaranteed.

Prices for 1921.

1 to 4 inclusive	$3.00 ea.
5 to 9 inclusive	2.90 ea.
10 or more...	2.80 ea.
Breeders	12.00 ea.

Jay Smith

Route Three
Vincennes, Indiana.

Comb Honey Producers

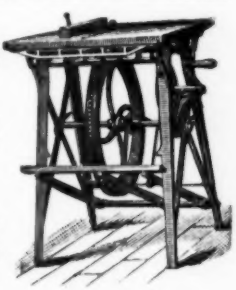
MAKE MORE MONEY

By using the Rauchfuss Combined Section Press and Foundation Fastener, the best, most accurate, and rapid device of its kind to be had. Will set up 4,000 sections a day and each will be exactly right. Write for descriptive circular. Price $9.10; mailing weight, 4 lbs.

H. D. RAUCHFUSS, Englewood, Colo.

BARNES' Hand and Foot Power Machinery

This cut represents our combined circular saw, which is made for beekeepers' use in the construction of their hives, sections, etc.



Machines on Trial

Send for illustrated catalog and prices.

W. F. & JOHN BARNES CO
545 Ruby Street
ROCKFORD, ILLINOIS

"Best" Hand Lantern

A powerful portable lamp, giving a 300 candle power pure white light. Just what the farmer, dairyman, stockman, etc. needs. Safe—Reliable—Economical—Absolutely Rain, Storm and Bug proof. Burns either gasoline or kerosene. Light in weight. **Agents wanted. Big Profits. Write for Catalog.**

THE BEST LIGHT CO.
306 E. 5th St., Canton, O.

Golden and Three-Banded Queens

Northern Queens for Northern Beekeepers

THE DEPARTMENT OF CONSERVATION
STATE OF INDIANA
Division of Entomology
INDIANAPOLIS, IND.

Indianapolis, Jan. 17, 1921.
Mr. Ross B. Scott, Lagrange, Ind.

Dear Mr. Scott: I am pleased to learn that you anticipate enlarging your queen-rearing department, since the increased production of high-grade queens, such as you have been sending out, is of vast importance.

During the past year I have had the opportunity of seeing a large number of queens, and their bees, bought of you; and I commend you for your careful selection, care in shipping, and excellent quality of stock furnished your customers.

Last season I helped to introduce 147 golden Italian queens, bought of you by members of a county association; they were a beautiful lot of queens, all arrived in fine condition; and, as they were to be received on three different days, the fact that they arrived on exactly the days you promised is a feature of efficiency much appreciated by beekeepers. Wishing you continued success, I am, yours very truly,
C. O. YOST, Chief Inspector Apiaries.

Untested queens for June delivery: One, $1.50; six, $8.00; dozen, $15.00. Safe arrival and satisfaction.

ROSS B. SCOTT, Lagrange, Indiana

Too Late for Classification.

WANTED—Alfalfa and timothy hay, also oats, carlot. State lowest price.
Thomas J. McDermott, Belleville, N. J.

WANTED—A Barnes wood-working outfit. State what you have and price. J. W. Sherman, Valdosta, Ga.

FOR SALE—50 empty Danzenbaker bodies, freshly painted, 70c each, $30.00 takes the lot.
Wm. Stika, Little Ferry, N. J.

FOR SALE—Cowan 2-frame extractor, $25.00. Emil E. Nelson, R. D. No. 5, Box 104, Hutchinson, Minn.

FOR SALE—Auto trailer. Made for beeyard use. Pneumatic tires. Photo furnished. $60.00.
B. F. Kindig, East Lansing, Mich.

COLORADO QUEENS. Pure Italians. Our sunny climate and altitude produce the best there are. Write now for price list. C. I. Goodrich, breeder of fine queens, Wheatridge, Colo.

WILLOW DELL queens and nuclei stand the test with any. Queens, $1.25; 2-fr. nuclei, $5.00; 4-fr., $8.00, including fine untested queen. Ready for delivery, receiver to return nuclei boxes collect.
H. S. Ostrander, Mellenville, N. Y.

A BARGAIN—I shall select 40 of the best colonies in one of our out-yards this year to run for increase. Now I want the queens in these all sold, so I can remove them all at the same time to start cells for increase. They are all less than one year old, right in the prime of their life. Mothers of prime colonies, the pick of the whole yard, and purely mated, descendants of the famous Moore strain of leather-colored Italians. In order to have those queens all sold when I want to remove them I am going to offer them at a bargain. I will sell them for $1.50 each, cash with order. Orders may be sent now; first ones to send get the queens. Queens will be mailed sometime about the 15th or 20th of June, dependent on the season and weather. Safe arrival and satisfaction guaranteed. Elmer Hutchinson & Son, Lake City, Mich.

Italian Queens

$2.00 each.

APIARIAN SUPPLIES

I. J. Stringham

Glen Cove, New York.

INDIANOLA APIARY

will furnish 3-banded Italian bees and queens: Untested queens, $1.00 each; tested, $1.50 each. One pound bees, no queen, $2.00. No disease.

J.W.SHERMAN,VALDOSTA,GA.

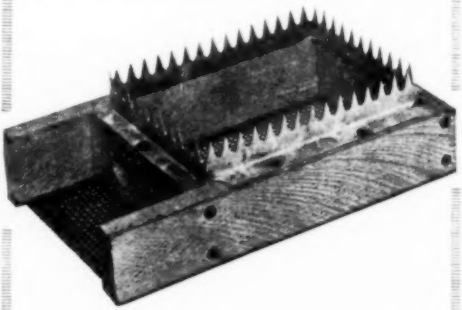
NEW ENGLAND

BEEKEEPERS will find a complete stock of up-to-date supplies here. Remember we are in the shipping center of New England. If you do not have a 1921 catalog send for one at once.

H. H. Jepson, 182 Friend St., Boston 14, Mass.

Stop Losing Valuable Queens!

This can be done by the use of the Jay Smith Push-in-the-Comb introducing cage. This cage has been thoroughly tested, and will give very satisfactory results. For complete information on



this cage, see pages 498 to 500, August, 1919, "Gleanings in Bee Culture." Price complete, 75 cents each; ten, $7.00; one hundred, 60.00.

The A. I. Root Company

West Side Station
MEDINA OHIO

ROOT'S BEE SUPPLIES

Carload stocks at Ohio's distributing center. Orders filled the day they come in. Save time and freight by ordering from

A. M. MOORE, Zanesville, Ohio
22½ S. Third Street.

QUEENS

June queens that fill the supers.
Orders filled promptly.
PURE THREE-BAND ITALIANS

Untested, $1.25
Select Untested, $1.50

D. W. HOWELL
Shellman, Ga.

GOLDEN QUEENS FOR 1921

Untested queens for delivery from April 20th to July 1st, $1.50 each, or 6 for $8.00; for hundred lots write for prices. I guarantee safe arrival and reasonable satisfaction, and all orders and inquiries will be answered promptly.

R. O. COX
Route 4, Luverne, Ala.

MASON BEE SUPPLY COMPANY

MECHANIC FALLS, MAINE
From 1897 to 1921 the Northeastern Branch of The A. I. Root Company

Prompt and Efficient Service

BECAUSE—Only Root's Goods are sold.
It is a business with us—not a side line.
Eight mails daily.
Two lines of railway.

If you have not received 1921 catalog send name at once.

STUTT'S ITALIAN QUEENS

are supreme queens; ready June 1. Untested, $1.25; 6, $6.50; 12, $12.50. Select untested, $1.50; 6, $8.00; 12, $15.00. Pure mating and safe arrival guaranteed.

ALFRED A. STUTT, Lincoln, Ills.

Queens—Rhode Island—Queens

Italian Northern-bred queens. Very gentle and hardy. Great workers. Untested, $1.25 each; 6 for $7.00. Circular on application.

Queens delivered after June 1.

O. E. TULIP, Arlington, Rhode Island
56 Lawrence Street.

LARGE, HARDY, PROLIFIC QUEENS

Three-band Italians and Goldens. Pure mating and safe arrival guaranteed. We ship only queens that are top notchers in size, prolificness, and color. After June 1st: Untested queens, $1.50 each; 6 for $8.00; 12 or more, $1.40 each; 25 or more, $1.25 each. Tested queens, $3.00 each; six for $16.00.

Buckeye Bee Co., Justus, Ohio.

GOOD WILL AND GOOD QUEENS
ARE BACK OF
FOREHAND'S THREE BANDS
THE THRIFTY KIND

Good will has made our success.
Our good queens will make your success.

These two forces working together have made it possible for us to serve the beekeepers for over a quarter of a century.

Hearty support for twenty-nine years.

Good Queens for twenty-nine years.

Each is the proof of the other. Both are proof that you will not make a mistake when you requeen with Forehand's Three Bands—the bees that are **surpassed by none but superior to many.**

Good queens are the success of an apiary. Your success is ours. We try to help you in every way. We give you good queens and good service. We guarantee pure mating, safe arrival, and satisfaction.

We are now booking orders for immediate delivery.

Write for circular giving full information on bees and queens.

PRICES:

Up to June 30.

	1	6	12
Untested	$2.00	$10.00	$18.00
Select Untested	2.25	11.50	21.00
Tested	3.00	16.00	30.00
Select Tested	4.50	25.00	45.00

Write for prices in large quantities.

Pound Bees from May 1 to June 15.

One-pound package: 1, $3.75; 25 or over, $3.50; 50 or over, $3.25; 100 or over, $3.
Two-pound package: 1, $6.00; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5.
Add the price of the queen wanted.

W. J. FOREHAND & SONS
FORT DEPOSIT, ALABAMA

Buy Your Bee Supplies Now

Take advantage of early-order discounts by ordering NOW. We guarantee to please you. "Prompt service and the very best" is our motto. *We want your beeswax and old comb.* Highest cash and trade prices offered. Texas beekeepers should write A. M. HUNT, Goldthwaite, Texas.

Manufactured by

Leahy Manufacturing Company

95 Sixth St., Higginsville, Missouri.

Write for FREE catalog. It is to your interest.

Established 1885.

Write us for catalog.

BEEKEEPERS' SUPPLIES

The Kind You Want and the Kind That Bees Need.

We have a good assortment in stock of bee supplies that are mostly needed in every apiary. The A. I. Root Co.'s brand. Let us hear from you; information given to all inquiries. Beeswax wanted for supplies or cash.

John Nebel & Son Supply Co.

High Hill, Montgomery Co., Mo.

SPECIAL CROPS

$10,000.00 per acre every 5 years.

A high grade monthly devoted to growing MEDICINAL plants. $1.00 per year, sample copy ten cents.

HYBRID POTATO SEED. Something new. Every seed will give you new variety of potato. You will get all shapes and all colors. Some better than old standard sorts and some not as good. Package of this seed 25 cts. Potato seed and new subscription both for $1.00. Address

SPECIAL CROPS PUB. CO.
Box G, Skaneateles, N. Y.

LEWIS 4-WAY BEE ESCAPES

Four exits from supers. Fits all standard boards. Springs of coppered steel. Made of substantial metal. Made by

G. B. Lewis Company, Watertown, Wis., U.S.A.

Sold only by Lewis "Beeware" Distributors.

Happy Hours in Texas.—Continued from page 355.

travel, even if the best part of the whole trip is the getting back home to one's children again; and it sounds larger to measure the time by hours instead of days, for there have been times when the latter term would have had to be stated in fractions instead of the plural. And yet my p. e. claims he travels more slowly when I am along. Speaking in an Irish manner, I would hate to accompany him when he travels alone.

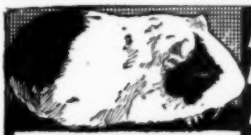
PATENTS Practice in Patent Office and Court. Patent Counsel of The A. I. Root Co.

Chas. J. Williamson, McLachlan Building, WASHINGTON, D. C.

The "BEST" LIGHT

Positively the cheapest and strongest light on earth. Used in every country on the globe. Makes and burns its own gas. Casts no shadows. Clean and odorless. Absolutely safe. Over 200 styles. 100 to 2000 Candle Power. Fully Guaranteed. Write for catalog. AGENTS WANTED EVERYWHERE.

THE BEST LIGHT CO.
306 **E. 5th St., Canton, O.**



Raise Guinea PIGS FOR US!

We need men and women, boys and girls everywhere to raise Guinea Pigs for us. We tell you where to get them, show you how and buy all you raise. Big opportunity for money making. Thousands needed weekly.

Easy to Raise—Big Demand No special knowledge, **Large Profits** experience or equipment needed. They breed the year round—are very prolific—require but little space or attention. Pay better than poultry or squabs—cost less to house, feed, keep, easier raised—less trouble, market guaranteed. **FREE** Particulars, contract, and booklet how to raise

CAVIES DISTRIBUTING COMPANY
3145 Grand Avenue, Kansas City, Mo.
Largest Guinea Pig breeders and distributors in America.

World's Best Roofing at Factory Prices

"Reo" Cluster Metal Shingles, V-Crimp, Corrugated, Standing Seam, Painted or Galvanized Roofings, Sidings, Wallboard, Paints, etc., direct to you at Rock-Bottom Factory Prices. Positively greatest offer ever made.

Edwards "Reo" Metal Shingles

cost less; outlast three ordinary roofs. No painting or repairs. Guaranteed rot-fire, rust, lightning proof.

Free Roofing Book

Get our wonderfully low prices and free samples. We sell direct to you and save you all in-between dealer's profits. Ask for Book No. 183

LOW PRICED GARAGES

Lowest prices on Ready-Made Fire-Proof Steel Garages. Set up any place. Send postal for Garage Book, showing styles.

THE EDWARDS MFG. CO.,
633-683 Pike St., Cincinnati, O.

FREE Samples & Roofing Book

NOTICE!

Pritchard Queens

are not just common queens named, but

A NOTED STRAIN

The result of years of careful breeding and selection. Reared and offered for sale by

ARLIE PRITCHARD

Medina, Ohio.

See my classified ad, page 307 for prices and guarantee.

QUEENS

Select Three-Banded Italians. I have one of the most modern queen-rearing apiaries in the South, and am breeding from the best Italian stock to be found. Pure mating, prompt and safe arrival guaranteed.

	1	12	50 or more
Untested	$1.50	$15.00	$1.00 each
Tested	3.00	30.00	

Write for descriptive circular and prices on queens in lots of 100 or more.

HARDIN S. FOSTER,
Dept. G, Columbia, Tenn.

Spicer's Three-Banded Italian Queens

now ready to mail. These queens are bred so as to have all the desired qualities, hustlers, hardy, and gentle.

	1	6	12
Untested queens	$1.50	$8.00	$15.00
Tested queens	3.00	16.50	30.00

I do not list select queens, as the above are all select. Safe arrival and satisfaction guaranteed.

ROBERT B. SPICER
Wharton, N. J.

THREE-BAND and GOLDEN QUEENS

That produce hustling bees. Bred to fill the supers from the finest breeding strains obtainable. Hustlers, long-lived, and as beautiful in size and color as can be. Price each, untested, $1.75; tested, $3.00. Orders filled promptly, satisfaction guaranteed. Ask for price on large orders.

DR. WHITE BEE COMPANY
SANDIA, TEXAS.

NEWMAN'S ITALIAN QUEENS

Bred From the Best. Absolutely First Quality and fully guaranteed. No disease. Satisfaction and safe arrival. Untested, $1.50; 6, $8.00; 12, $15.00. Select Untested, $2.00; 6, $10.00. 12, $19.00. Circular free.

A. H. NEWMAN, Queen Breeder
MORGAN, KY.

'Queens of Quality'

Three-band Italians Only.

Bred from our heaviest producers—and we have six outyards. Untested now ready, $1.50 each. You make dollars where we make cents in buying these queens. We guarantee safe arrival, pure mating, and entire satisfaction. Not a single complaint in seven years.

J. I. BANKS
Dowelltown, Tenn.

QUEENS! QUEENS! QUEENS!

Have you secured all you need? I have them as fine as you can secure anywhere at a reasonable price. After May 15th you can get them at the following prices. If you want them earlier look on page 179, March issue, or you will find my ad in the April issue of Gleanings.

	1	12
Untested queens	$1.50	$13.50
Tested queens	2.50	26.00
Select tested	3.00	30.00

Breeders $5.00 to $10.00 at all times.

You will notice that I don't advertise any select untested queens. It is because all that I ship now are selected. If they are not the best, I don't ship them; and if they don't give you satisfaction and you write me, I will make it satisfactory to you.

H. L. MURRY
Soso, Mississippi.

QUEENS OF MOORE'S STRAIN

OF ITALIANS
PRODUCE WORKERS

That fill the super quick
With honey nice and thick.

They have won a world-wide reputation for honey-gathering, hardiness, gentleness, etc. Untested queens, $2.00; 6, $11.00; 12, $21. Select untested, $2.25; 6, $12.00; 12, $23. Safe arrival and satisfaction guaranteed. Circular free.

J. P. MOORE, Queen Breeder
Route 1, Morgan, Kentucky

Norman Brothers' Queens

Mr. Beekeeper, if you want good quality, quick service, prompt attention, and perfect satisfaction, TRY NORMAN BROS. pure three-banded Italians and see for yourself. We are not going to say that we have the best in U. S. A., but we do say we have as good as can be bought for the money. Our bees are hardy, gentle, prolific, disease-resisting and honey-gatherers. Orders filled promptly by return mail or your money refunded. We guarantee pure mating, freedom from all diseases, and safe arrival in U. S. A. and Canada. Remember that you take no risk when you deal with us. Isn't that enough said?

Prices June & July:	1	6	12	50
Untested Queen	$1.50	$8.00	$15.00	$50.00
Select Untested	1.75	8.25	16.50	58.00
Tested Queen	3.00 each			
Select Tested	4.00 each			

Norman Brothers' Apiary

NAFTEL, ALABAMA

Quigley's Queens and Bees

Three-Banded Italians are bred from ideal colonies by double grafting, producing queens of superior quality. Twenty years building this strain from the best honey-producing colonies. No disease, 35 years in this location. June delivery, booking orders. Tested, $3.00; untested, $2.00; 6, $11.00; 12, $20.00. Breeders, $10.00, shipped on brood. Three-frame nucleus with untested queen, $9.00; tested, $10.00. Ten-frame colony with tested queen, $20.00. Two-pound package with untested queen, $8.00; tested, $9.00.

Purity and satisfaction guaranteed. Send for circular.

E. F. Quigley & Son, Unionville, Mo.

Northwestern Headquarters for Italian Queens

The queen is the life of the colony. You cannot afford to keep poor queens or a poor strain of bees. I have been in the bee business for more than twenty years and have made every effort to improve the honey-gathering qualities of my bees by purchase of breeders and by selective breeding. I believe that my bees are unsurpassed by any. When you buy Untested Queens from me you are getting select untested queens. I will begin mailing queens about June 1.

Prices June 1 to October 1:	1	6	12	50	100
Untested Italian Queen	$1.50	$7.50	$14.00	$55.00	$105.00
Tested Italian Queen	2.50	13.50			

I have no pound packages or nuclei for sale.

J. D. HARRAH, Route 1, Freewater, Oregon

QUALITY QUEENS AT QUANTITY PRICES

BREED THREE-BANDED ITALIANS ONLY

Prices for 1921:	Nov. 1 to June 30			July 1 to Nov. 1		
	1	6	12	1	6	12
Untested	$2.00	$9.75	$18.00	$1.50	$8.00	$15.00
Selected Untested ..	2.25	11.25	19.80	1.75	9.75	16.80
Select Tested	3.50 each			3.00 each		

Breeding queens after June 15th, with 2-fr. nuclei, $15.00 each.

Queens are reared from mothers whose colonies are GENTLE, HARDY, and as HONEY GATHERERS will compare with any. I rear all my queens personally by the latest and most approved methods, which insure queens that are capable of duplicating the excellent characteristics of their mothers. You take absolutely no risk in ordering my queens, for satisfaction and safe arrival are guaranteed in U. S. and Canada. Since I produce QUALITY instead of QUANTITY you should place an early order to insure getting your queens on time. I sell no bees by the pound nor nuclei ONLY with high-priced breeding queens. Foreign shipments at receiver's risk. Health certificate with each shipment.

HERMAN McCONNELL, Robinson, Illinois

Lower Prices

Order from these quotations.
Write for complete price list.

Untested Italian queens	$ 1.25
Queens, per hundred	98.75
Two pounds bees with queens	5.75
Hundred packages bees with queens	550.00
Sections, No. 2 grade	12.60
Hoffman brood-frames, per M	65.00
5-pound friction-top pails (200)	20.50
Cases 5-gallon cans, 2 in case	1.35
5-gallon cans in bulk (100)	41.75
Shipping cases for comb honey, per 100	50.00

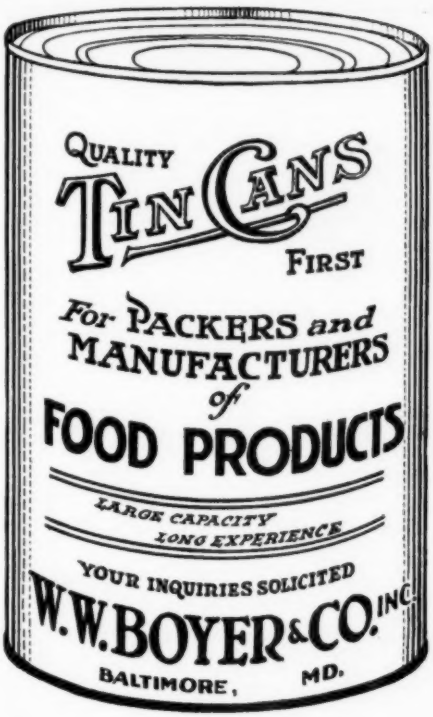
Airco Comb Foundation

	1 lb.	25 lbs.	100 lbs.
Medium Brood	$0.85	$0.80	$0.75
Light Brood	.87	.82	.77
Thin surplus	.90	.85	.80
Extra thin surplus	.92	.87	.82

The Foster Honey & Merc. Co.

Boulder, Colorado.

"Foster Your Business"
"Airco Your Bees"



Glass and Tin Honey Containers

2½-lb. Cans, 2 dozen reshipping cases.....$1.45 case; crates of 100, $ 6.50
5-lb Pails (with handles), 1 dozen reshipping cases 1.35 case; crates of 100, 8.30
10-lb. Pails (with handles), ½ doz. reshipping cases 1.10 case; crates of 100, 12.75
60-lb. Tins, 2 per case—NEW, $1.30 case; USED, 50c.

WHITE FLINT GLASS, WITH GOLD LACQD. WAX LINED CAPS.

8-oz. Honey Capacity, Cylinder Style.....$1.50 per carton of 3 dozen
16-oz. Honey Capacity, Table Jar Service..... 1.40 per carton of 2 dozen
Quart or 3-lb. Honey Capacity, Mason Style..... 1.00 per carton of 1 dozen

HOFFMAN & HAUCK, Inc. - - Woodhaven, New York

BANKING BY MAIL AT 4%

THE FUTURE

contains no worry or anxiety for the man who deposits a portion of his earnings regularly BY MAIL at 4% interest with this bank. Write for booklet.

THE SAVINGS DEPOSIT BANK CO.

A.T.SPITZER, Pres.
E.R.ROOT, Vice Pres. E.B.SPITZER, Cash.
MEDINA, OHIO

Italian Bees and Queens

For Delivery after June 5th.

Nuclei:	12	25	50
3-fr.....	$4.50 ea.	$4.25 ea.	$4.00 ea.
4-fr.....	5.50 ea.	5.25 ea.	5.00 ea.

8-fr. colony in ten-frame, lock-joint cypress hive-body, $11.50 ea., for 12; $10.50 ea. for 25; $9.50 ea. for 50 or more. Add price of queen desired with each nucleus or colony. Standard fixtures wired frames.

Queens:	12	25	50
Untested	$1.25 ea.	$1.20 ea.	$1.10 ea.
Sel. Unt.	1.50 ea.		
Tested	2.25 ea.		

Select Tested, 1, $3.50; 3, $9.75; 6, $27.

100 or more untested queens, $1.00 ea.

Bees shipped by express f. o. b. shipping point. Safe arrival, no disease, and satisfaction guaranteed.

J. L. St. ROMAIN, Apiarist

White Clover Farm and Apiary.
HAMBURG, LOUISIANA

QUEENS

FROM SELECT BREEDING

21 Years of Experimenting. We have nothing but the very best.

3-BAND ONLY
Price Cash With Order.
Before July 1st.

Untested	$1.50
Selected	2.25
Tested	3.00
Selected	3.50

Orders filled in rotation. Write for prices in large quantities.

Did you get what you were looking for when you bought your last year's Queens? If not, try one that will please you. My queens are reared on a new system, large and prolific, surpassed by none but superior to many. No complaint last year.

F. M. RUSSELL
IMPORTER
ROXBURY, OHIO R. F. D. No. 2

Beeswax Wanted

In big and small shipments, to keep Buck's Weed-process foundation factory going. We have greatly increased the capacity of our plant. We are paying higher prices than ever for wax. We work wax for cash or on shares.

Root Bee Supplies

Big stock, wholesale and retail. Big catalog free.

Carl F. Buck

The Comb-foundation Specialist
August, Kansas
Established 1899.

QUEENS AND BEES

We have one of the most modern queen-rearing outfits in the United States and are breeding from new imported Italian blood. We produce QUALITY instead of QUANTITY.

A limited number of orders for spring delivery will be accepted at the following prices:

Quantity	1	6	12	24
Untested	$2.00	$11.40	$21.60	$40.80
Sel. Untested..	2.25	12.80	24.30	45.90

Special price of $1.50 each on untested queens for June delivery in lots of 12 or more, if booked in advance.

We are also prepared to furnish full colonies, nuclei, and pound packages. Write today for prices.

The A. I. Root Co. of Texas
P. O. Box 765,
SAN ANTONIO, TEXAS.

Quality Bee Supplies From a Reliable House

¶ Without fear or favor I place my BEE SUPPLIES and SERVICE before you.

¶ It is the small annoyances that often grow into disastrous results. Avoid the so-called "little losses" by using MONDENG'S goods. Quality is first—save time when you put your goods together by getting supplies that are accurately made. Service is next—no delays when bee supplies are ordered from my factory.

¶ I am ready to meet your urgent needs. Send for my latest price-list.

¶ Closing out all Langstroth and Wisconsin hives and supers. Also Langtroth triangular top-bar frames, and eight-frame D. T. supers for 4 x 5 sections. At cost price, write for quotations.

Charles Mondeng
146 Newton Ave. N. &
159 Cedar Lake Road.
MINNEAPOLIS, MINNESOTA.

Take Notice, Beekeepers

We have for June delivery 500 packages bees with untested queens at reduced prices. When you buy bees from us you know they will arrive in good condition. This is our eleventh successful year in shipping bees to all parts of U. S. and Canada. Remember you take no chances. We stand good the loss. One and two lb. packages are shipped on a standard Root-Hoffman brood-frame with brood and honey, which insures safe arrival.

One pound bees and queen	$4.00
Two pounds bees and queen	5.00
Two-frame Nucleus and queen	4.75
Three-frame Nucleus and queen	5.50
Untested queen without bees, ea.	1.25
12 for	12.00
Selected Tested, each	1.75

The above stock is three-banded only. We ship by express only. We guarantee no disease and safe delivery.

Where satisfaction comes from.

OSCAR MAYEUX
Lock Box No. 15.
HAMBURG, LA.

Completely Destroys the Weed Growth

More than that, the BARKER breaks the hardest crust into a level, porous, moisture-retaining mulch — **all in the same operation.**

A ten-year-old boy can run it—do more and better work than ten men with hoes. Saves time and labor, the two big expense items.

BARKER WEEDER, MULCHER AND CULTIVATOR

Eight reel blades revolve against a stationary underground knife—like a lawn mower. **BEST WEED KILLER EVER USED.** Works right up to plants. Cuts runners. Aerates the soil. Has leaf guards, and shovels for deeper cultivation—3 *garden tools in* 1.

FREE ILLUSTRATED BOOK.

Tells how gardeners and fruit-growers everywhere are reducing their work; increasing their yields.—How to bring growing plants through a dry season.—How to conserve the moisture and force a larger, more rapid growth. Send TODAY for this free, illustrated book and special Factory-to-User offer.

BARKER MANUFACTURING COMPANY
Dept. 23. David City, Neb.

Barker Mfg. Co., Dept. 23, David City, Neb.
Gentlemen:—Send me postpaid your free book and Factory-to-User offer.

Name .....
Town .....
State .....
R. F. D. or Box .....

Southern Headquarters

Reliable Three-Banded Italian Queens

For several years our queens have been used and recommended by a number of the foremost beekeepers in the U. S. and Canada. We cannot afford to disappoint them, and we *will not* disappoint you.

Having several hundred colonies in outyards to select breeding stock from, and large well-equipped queen-rearing yards, we are sure we offer you something good. We pay special attention to honey-gathering qualities, but do not forget gentleness, beauty, etc. Our queens are good to look at, and their bees a pleasure to work with.

Prices to July 1: Untested, $1.50 each; six, $8.50; twelve, $16.00; fifty or more, $1.25 each. Tested, $3.00 each.

Prompt service, safe arrival of queens, and satisfaction, we guarantee. Any queens that prove to be mismated will be replaced free of charge. No foul brood or other contagious bee disease has ever been in our vicinity.

W. D. ACHORD, Fitzpatrick, Alabama.

ITALIAN BEES & QUEENS OF PURE THREE-BAND STOCK

Bred from best hustlers, by methods that years of experience have taught us are best, including the use of large, strong nuclei, which insures young queens emerging strong and vigorous. Safe arival in U. S. and Canada. Health certificate with each shipment. Satisfaction guaranteed.

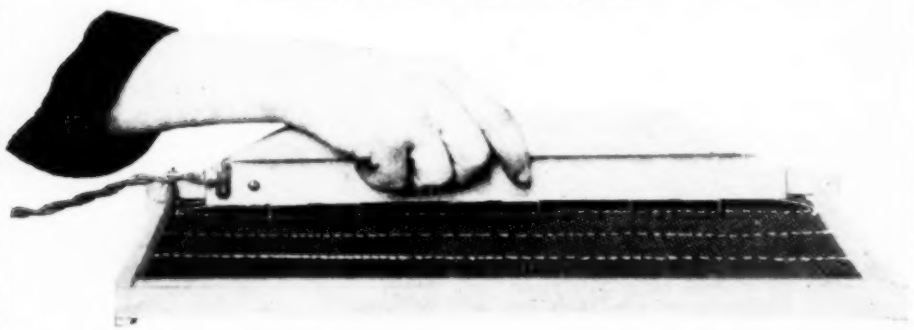
Untested	1 to 12, $1.50 each. Over 12, $1.25 each
Select Untested	1 to 12, $1.75 each. Over 12, $1.50 each
Tested	1 to 12, $2.50 each. Over 12, $2.25 each
Select Tested, suitable for breeders	$5.00 each

Two-frame nuclei, $5.00. Three-frame nuclei, $7.00; add price of queen wanted with each. Eight-frame colony, $15.00. Ten-frame colony, $17.50. Standard equipment all around, and wired frames.

JENSEN'S APIARIES, CRAWFORD, MISS., R. F. D. No. 3.

THE ROOT ELECTRIC WIRE IMBEDDER

Can be operated on current from any automobile storage battery. The most rapid tool for imbedding one wire at a time. Price $1.25 postpaid.



The Root Electric Wire Imbedder is operated by any storage battery, or lighting circuit in connection with resistance. By simply pressing the tool firmly down against the wire with the sheet of foundation on a form board, the wire is easily and quickly imbedded into the foundation. When the tool is removed the circuit is broken. Complete directions sent out with each imbedder.

THE A. I. ROOT COMPANY, MEDINA, O.

SELECT THREE-BANDED ITALIANS OF THE HIGHEST QUALITY ONE GRADE

800 honey-gathering colonies from which to select the very best breeders. No one has better bees than I. Can make prompt delivery by return mail. I have not yet disappointed a customer.

PRICES: Untested (to July 1): each $1.50; 12 or more $1.25 each. After July 1, 1 to 49 $1.25 each, 50 or more, $1.00 each. Tested (to July 1), each $2.00. Breeders (to July 1), $25.00 each.

Pure mating, safe arrival, and satisfaction guaranteed. It is left with customer to say what is satisfaction.

My customers say my queens stand the northern winters. They are bred up for this, combined with the highest honey-gathering qualities and prolificness.

A new customer from Missouri, where you have to show them writes: "The dozen queens arrived promptly. They are the most beautiful I ever saw."—(Name on request.)

Another one from the same state writes: "Your 100 2-lb. packages averaged 90 pounds surplus honey per colony, 10 pounds more per colony than the other 2-lb. packages purchased elsewhere."—H. H. Thale, Durham, Mo.

Now listen to this, from Ontario, Canada: "Bees and queens purchased of you last season all wintered without a single loss. Save me 50 untested queens for May delivery."—(name on request.)

JASPER KNIGHT, Hayneville, Ala.

BEE SUPPLIES The Very Best Quality & Service

We have a large stock of Hives, Bodies, Supers, Foundation, and other supplies ready for immediate shipment.

Give us an opportunity to quote you our prices; we are certain you will find them attractive.

If you want THE VERY BEST QUALITY FOR THE LOWEST PRICE, send us your orders at once. All correspondence will have our immediate attention.

August Lotz Company, Boyd, Wis.

BE PREPARED!

BEES wintered better than for a number of years, due to mild winter. Early breeding will be heavy.

Be prepared for swarming. Do not lose the honey crop on account of lack of sections or extracting frames. Order before it is too late.

"falcon" quality has stood supreme for over 40 years. Write for our new red catalog. We guarantee safe arrival on all shipments.

W. T. FALCONER MANUFACTURING CO.

Falconer (near Jamestown), N. Y., U. S. A.

"Where the best beehives come from"

Guaranteed Hubam Clover
Annual White Sweet Clover

(Hughes Variety)

All of the annual white sweet clover seed of the 1920 crop was exhausted before May 1st. But seed of an early strain, planted in Texas after Christmas, 1920, began to reach maturity early in May. This seed is now available.

You can get it in time to test it this year. It blooms for bees in three or four months, and continues to bloom for a much longer period than most plants used for the purpose. Many beekeepers have declared it to be the greatest clover yet tried. It combines quick growth with an unusual wealth of honey-making blooms. It is also a legume that returns a large amount of plant food to the soils. It has frequently been described editorially by Gleanings in Bee Culture.

Big profits are possible growing seed for your neighbors, and the farmers and beekeepers of your locality.

The price is now $5.00 a pound. Order from the Henry Field Seed Co., Shenanodah, Iowa, or direct from the grower who guarantees.

The De Graff Food Company, Seed Dept. 303, De Graff, Ohio

BEE SUPPLIES

Root's Goods at Factory Prices With Weber's Service

We carry several carloads of bee supplies, and are able to give prompt shipment at all times. Our motto is a customer must be satisfied; give us a trial and we will show you how quickly we will answer your correspondence; send your order and it will follow 24 hours after we receive it. Our new catalog is now ready; send for same. We have thousands of satisfied cutomers; why not you? Send a list of your wants and we will quote you.

C. H. W. Weber & Co.

2163-65-67 Central Ave., Cincinnati, Ohio.

Thagard's Italian Queens

Bred for Quality

My three-banded queens are bred from imported stock; they are hardy, prolific, gentle, disease-resisting and honey producers. A good queen is the life of any colony; head your colony with some of our queens, place our queens against any queens you may obtain anywhere, **and note the results.** I do not breed for **quantity,** but breed for **quality.** My queens have proven this to thousands of beekeepers that have tried them. Book your order now for May and June delivery.

April 1st to July 1st.

	1	6	12
Untested	$2.00	$8.00	$15.00
Select Untested	2.25	10.00	18.00
Tested	3.00	16.00	28.00
Select Tested	5.00	25.00	50.00

Safe arrival, pure mating, and perfect satisfaction guaranteed.
Circular free.

V. R. THAGARD - - - Greenville, Alabama

Forehand's Queens

They Satisfy---Why?

Because of 28 years of experimental work, with both queen-breeding and honey-production. With breeding and selecting of imported queens, I have reached a standard which is ideal. Queens as good, but none BETTER. Why experiment? Take advantage of the life experience of my breeders.

OUR SERVICE STATION—We are ready to serve you at all times, whether you desire queens or advice. Let us help you with your bee problems. All questions are cheerfully answered.

I BREED THREE-BANDED ITALIANS ONLY.

June 1 to Nov. 1.	1	6	12
Untested	$1.50	$ 7.50	$13.50
Selected Untested.	1.75	9.00	16.50
Tested	2.50	13.00	24.00
Selected Tested	3.00	16.50	30.00

Bees in two-pound packages, 1 package, $6.00; 25 or over, $5.80; 50 or over, $5.40; 100 or over, $5.00, without queens. Will begin shipping bees as early as weather will permit.

Orders booked now for spring delivery. One-fourth the full amount with order and balance when shipment is desired. Pure mating, safe arrival, and perfect satisfaction guaranteed. Write for circulars and large-order discounts. Foreign orders at receiver's risk.

N. Forehand, Ramer, Alabama

THE

Southland Apiaries

W. S. TATUM, Proprietor HATTIESBURG, MISS.

Pure-Bred Italian Queens

From Root Home-Bred Queens

Orders filled in rotation unless date specified. Mating and Safe Arrival Guaranteed. Bees in Packages, Nuclei and Full Colonies.

QUEENS

Untested	$1.50 each;	12 or more, $1.25 each
Tested	2.50 each;	12 or more, 2.25 each
Select Tested	3.00 each;	12 or more, 2.75 each

PACKAGES

1-lb. pkgs., no queen	$3.00 each;	25 or more, $2.75 each
2-lb. pkgs., no queen	5.00 each;	25 or more, 4.75 each
3-lb. pkgs., no queen	7.00 each;	25 or more, 6.50 each

NUCLEI

Two-frame Nucleus, no queen	$4.50
Three-frame Nucleus, no queen	6.00

FULL COLONIES

Eight-frame colony, no queen	18.00
Ten-frame colony, no queen	20.00

Root Quality Bee Supplies

Airco Foundation

Prompt Service and Satisfaction Guaranteed.

ORDER NOW! BEE READY! STOCK UP! AVOID THE RUSH! BEGINNER'S OUTFITS A SPECIALTY.

DISCOUNT ON LARGE ORDERS

Time Is Money

You cannot afford to spend your time on any but
THE BEST BEES AND QUEENS.

Root Bees and Queens are second to none.

IF EXPERIENCE COUNTS—Fifty years' queen-breeding experience by Root experts should not be overlooked.

IF REPUTATION COUNTS—Root reputation, past, present, and future means much. The growth of the bee industry, dependent entirely upon better bees, is an item of much importance to the company offering you Root bees and queens. We cannot afford to sell anything but the best.

IF SALES RECORDS COUNT—Past sales tell their own story of the increasing demand for Root bees and queens.

THERE MUST BE A REASON.

ITALIAN QUEENS.—The season was early in Medina, and untested queens are available earlier than usual. Our breeding queens are selected with utmost care.

PRICES OF QUEENS.

Order by number.	June	July to Oct.
Catalog No. B312000—Untested queens	$2.50	$2.00
Catalog No. B313000—Select untested	3.00	2.50
Catalog No. B314000—Tested	3.50	3.00
Catalog No. B315000—Select tested	4.00	3.50

Write for discounts when lots of six or more are wanted.

NUCLEI.—A one, two, or three frame nucleus will make an astonishing record provided such a nucleus goes out, as ours do, on full worker combs in wired frames, well supplied with bees and the proper amount of brood.

Our nuclei are shipped by express in light wooden boxes with wire-screen top and bottom. It is necessary to have on hand hives into which to transfer the nuclei on arrival and then add frames containing full sheets of foundation to the nuclei as they increase in strength.

	Weight	June	July-Oct
Catalog No. B310100—1-frame Nucleus, no queen	4- 7 lbs.	$5.00	$3.50
Catalog No. B310200—2-frame Nucleus, no queen	9-12 lbs.	7.25	5.50
Catalog No. B310300—3-fr. Nucleus, no queen.	12-16 lbs.	9.50	7.50
Catalog No. B310400—5-fr. Nucleus, no queen.	22-27 lbs.	13.00	10.50

If queen is wanted, make a selection and add her price to the above.

PRICE OF BEES BY THE POUND—SHIPPED BY EXPRESS.

	Wt.	June	July-Sept.
Catalog No. B310700—1-lb. pkg. of bees, no combs	3 lbs.	$5.00	$3.50
Catalog No. B310800—2-lb. pkg. of bees, no combs	5 lbs.	8.00	5.50
Catalog No. B310801—3-lb. pkg. of bees, no combs	7 lbs.	11.00	7.50

If queen is wanted, make a selection and add her price to the above.

THE A. I. ROOT COMPANY

WEST SIDE STA., MEDINA, OHIO

Do you want those supplies rushed to you right away? We will do our best to meet your needs. TRY US.

Let us help you get that crop of honey. Make it the biggest ever. It is up to you. ORDER NOW.

"What is so rare as a day in June? Then if ever come perfect days" with the busy bees buzzing of a sunny afternoon. They are busy making your honey. Have you done your part? How about foundation and supers ready for use?

ORDER NOW!

F. A. SALISBURY
1631 W. Genesee St.
Syracuse, N. Y.

New York State Beekeepers, send for our catalog.

You need a veil and gloves. It DOESN'T PAY TO GET STUNG either by the bees or in ordering supplies.

We are here to SERVE you. Shipments by MAIL, EXPRESS, or FREIGHT. Write us for quotations.

June---July---August

Are your months of harvest. If there is any way whatever in which we can be of assistance to you in making these months successful ones, and your honey yield highly satisfactory, call on us. We have a rounded stock, and can ship at once the supplies you need at this time.

Hives
Supers
Covers
Bottoms
Escape-Boards
Porter Escapes
Honey-Boards
Hoffman Frames
Shallow Frames
Tinned Wire
Root's Sections
Honey Containers
Smokers
The New Foundation—AIRCO.

Your order will get our immediate and individual attention. It will be shipped to you over the shortest possible route, saving you time and money.

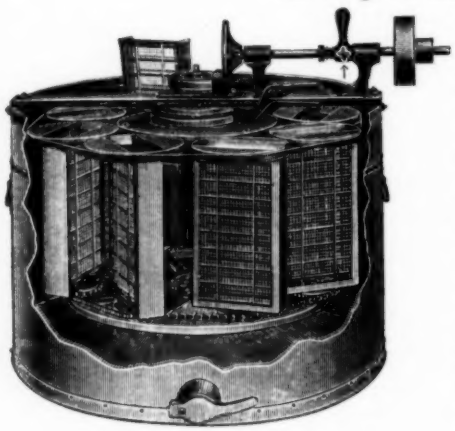
Our business---producing the Root Quality Goods.
Our specialty---service all the time.
Use us, in making these months pay.

The A. I. Root Company of Iowa

Council Bluffs, Iowa

Root's Power Honey Extractors

For Large or Small Producers



B472580—Buckeye Power Extractor. Permits reversing without stopping, as many times as desired.

Whether you have fifty colonies or five hundred, and produce honey by the ton or trainload, you can hardly afford to be without a Root power extracting outfit. The power extracting machines now on the market are filling a long-felt want, especially where it is impossible or inconvenient to get extra or competent help while the honey flow is on. Many thousand pounds of honey are lost annually because beekeepers are unable to get help at just the right time or during the few days when the heaviest flow is on. The honey is there and must be made room for within a few hours or it is gone. With a power extracting outfit it is possible to take care of the entire crop with no loss of time or crop. More honey can be taken from the combs by this process, the combs are not so easily broken, and you can have them ready to put back into the hives before the flow is over. You can't always depend upon getting a man at the right time, but your power machinery is always ready to begin work just when you want it most. These machines are not expensive either in first cost or in operating expenses, and every beekeeper who produces extracted honey for the market should have one. Ask for our free booklet, "Power Honey Extractors."

Four Gallons of Gasoline Used in Extracting 33,000 Pounds of Honey.

I have used the power honey extracting outfit for the past two years, and am more than pleased with it in every way, as it has done perfect work, saving labor and time. The cost of running the engine is comparatively nothing, as I used only four gallons of gasoline in extracting 33,000 pounds of honey. A. A. Ericson.

Rockton, Wisc.

(Extracting may be made an interesting science instead of an irksome task if the proper machinery is used.)

Gasoline Does What Man Can Not Do.

I have no patience with the man who says, "Let the boy turn the extractor." Can't you remember when you had to turn the grindstone? Would you want to disgust the boy with beekeeping and farm life? On the other hand, consider the boy's love for machinery. Tell him he is to have charge of the engine, and note how he feels his importance. Won't beekeeping have new charms for him? Had I but forty colonies of bees the power outfit would be part of my equipment. It has come to stay with me. It pays. It gets the thick ripe honey out of combs. Does what man can't. E. W. Brown.

Morton Park, Illinois.

When the engine is not in use to run the extractor, it may be connected to some other machinery, and made to pay for itself many times over. Steam engines are expensive and complicated. A good gasoline engine may be run by any one with ordinary intelligence, and is not an extravagant investment.

The following sizes and styles of Root Power Extractors now ready for immediate shipment:

	Pockets	Gear ratio	Diam.	Wt.
B472425—Four-frame power extractor	9⅝ in.	1 to 1 friction	29 in.	255
B472440—Eight-frame power extractor	9⅝ in.	1 to 1 friction	37 in.	365
B472447—Eight-frame power extractor 12	in.	1 to 1 friction	43 in.	435
B472580—Eight-frame Buckeye power extractor.	9⅝ in.	1 to 1 friction	43 in.	597

Write us or any of our distributors today for current prices.

THE A. I. ROOT COMPANY, West Side Sta., Medina, Ohio.

Farmers Should Buy Federal Farm Loan Bonds

FEDERAL Farm Loan Bonds are *safe*. They are secured by first mortgages on productive farms, the kind of assets with which you are already familiar, and in addition they are guaranteed jointly by the 12 Federal Land Banks with a combined capital of over $24,000,000.

Federal Farm Loan Bonds pay 5% *interest*—a better *net* income than from most farms rented to tenants.

Federal Farm Loan Bonds are *tax-free*. The principal is exempt; likewise the income from it.

Federal Farm Loan Bonds are *staple*. They bring a steady, dependable income twice a year, good seasons and bad, are A-1 security for loans, and are easily and quickly convertible into cash.

Farmers who buy Federal Farm Loan Bonds help to build a farmers' national co-operative banking system. These bonds can be had in denominations of $100, $500, $1000 and $5000, either coupon or registered form.

Keep your money out of "blue sky" schemes. Put it where it will be safe and help to build up the whole farming business. Buy Federal Farm Loan Bonds and encourage your neighbors and farm help to buy them.

You can buy Federal Farm Loan Bonds from any Federal Land Bank

Springfield, Mass.	St. Louis, Mo.	Louisville, Ky.	Columbia, S. C.
New Orleans, La.	Berkeley, Cal.	St. Paul, Minn.	Houston, Texas
Wichita, Kansas	Omaha, Nebr.	Baltimore, Md.	Spokane, Wash.

Send today for free bulletin giving detailed information as to these bonds. Address the nearest Federal Land Bank. Talk it over with your county agent or secretary of your local national farm loan association.

FEDERAL FARM LOAN BOARD

TREASURY DEPARTMENT · WASHINGTON, D. C.

THE AULT 1921 BEE SHIPPING CAGE

(Patent Pending)

1st. It is a dark cage, much more so than the open screen cages we have been shipping in in the past.

2nd. The feeder uses pure sugar syrup. Better than Honey or Candy to ship on; it contains water as well as feed.

3d. Feeders are made more substantial, 1-3 larger, and have screw cap that will not jar out.

4th. Instead of one small hole, we now use a cotton duck washer in the screw cap that has proven to overcome all the objections found to the liquid feed method.

5th. The Cage is one piece screen wire protected by thin boards on the outside. Send for free circular describing the cage in detail, prices, etc.

QUEENS - PACKAGE BEES—QUEENS

Will book your order with 20 per cent down, balance just before shipping. My Free Circular gives prices in detail, etc. Safe delivery guaranteed within 6 days of shipping point. We ship thousands of pounds all over U. S. A. and Canada.

1-pound package bees, $3.00 each; 25 or more, $2.85 each.

2-pound package bees, $5.00 each; 25 or more, $4.75 each.

3-pound package bees, $7.00 each; 25 or more $6.65 each.

Add price of queen wanted.
F. O. B. Shipping Point.

1 Untested Queen, $2.00 each; 25 or more, $1.75 each.

1 Select Untested Queen, $2.25 each; 25 or more, $2.00 each.

1 Tested Queen, $3.00 each; 25 or more, $2.70 each.

1 Select Tested, $3.50 each; 25 or more, $3.00 each.

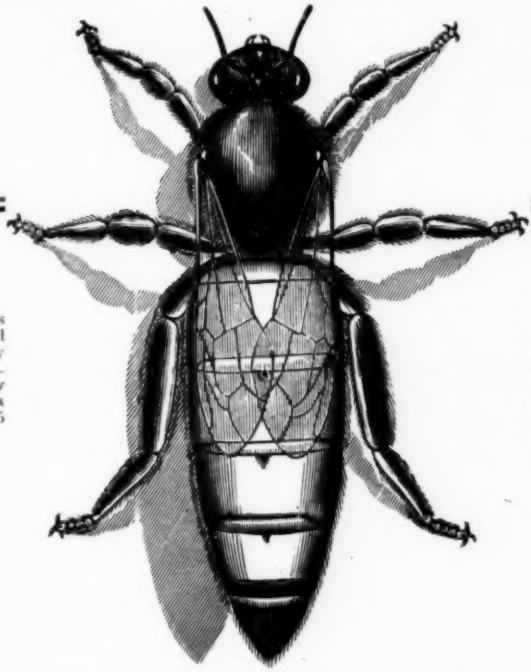
NUECES COUNTY APIARIES

E. B. AULT, Proprietor

CALALLEN, TEXAS

"Queens that are reared to please"

Highest Quality
Prompt
Service
Satisfaction



THEY ALWAYS SATISFY

"Gentlemen:
"The six queens arrived today. I will say with pride they are the most beautiful I ever saw and I have been a beekeeper for 15 years."

We assure you they will satisfy you the same.

OUR PRICES

Untested: 1, $1.50; 6, $8.00; 12, $15; 100, $100. Select Untested, 1, $1.75; 6, $9.50; 12, $17; 100, $120. Tested, 1, $3.00; 6, $14.75; 12, $25.00. Select Tested, 1, $4.00; 6, $23.00; 12, $42.00.

Write for prices on larger quantities than 100.

Our Reliable Three-Banded Italian Queens

WHY ORDER FARMER QUEENS? They are bred by as skillful and experienced queen-breeders as can be found in the United States. There are very few places where queens are reared under as favorable conditions as in our queen-rearing yards. We devote our time to rearing as good queens as possibly can be, and we positively guarantee that no better can be reared; we spare neither labor nor money in developing our strain of Italians. It is our intention to improve our original stock each year and to be more skillful queen-breeders. Our first original stock was procured from the highest quality obtainable, which we have proved to be the highest point and is now not surpassed by any. Our own eyes inspect every queen that leaves our yards; no culls sent out. Place your orders, and after you have given our queens a fair test and you are not satisfied in every way that they are as good as any you have ever used, just return them and we will send you queens to take their places or return your money. They are very resistant to diseases, the very best for honey-gathering. You take no risk in buying our queens; safe arrival in U. S. A. and Canada; satisfaction is left entirely to purchaser; prompt service given to all orders; every queen guaranteed to be purely mated.

The Farmer Apiaries, Ramer, Alabama

Where the Good Queens Come From.

ITALIAN BEES AND QUEENS

Going Back to Normal

Our "motto" is to give beekeepers the very highest quality Italian Queens, Bees, and Beekeepers' supplies at the lowest cost possible. Conditions make the following low prices possible. An absolute quality guarantee on everything we sell. Our intention and desire are to stay in the business, and to stay we have got to give you quality goods, therefore you run no quality risk in ordering from us.

QUEENS AND BEES

UNTESTED QUEENS: $1.25 each; 12 or more, $1.00 each.

After June 15: Untested Queens, $1.00 each; 12 or more, 75c each.

TESTED, $2.00; BREEDERS, $5.00 to $25.00.

PACKAGE BEES for June shipment, shipped from from Mayhew, Miss., or Helena, Ga.:

One-pound package $2.00
Two-pound package 3.75
Three-pound package 5.25

ONE, TWO, and THREE-FRAME NUCLEI at the above prices. Add price of queen wanted.

BEE SUPPLY SPECIALS

100,000 "A" grade sections in 4¼x4¼x1⅞, 4¼x4¼x1½, and 4x5 x1⅜ at $15.00 per 1000.

SHIPPING CASES for above sections at 65c each. Quality as good as can be had.

A job lot of good CYPRESS COVERS and BOTTOMS of standard dimensions in packages of five, made of seven-eighths lumber thruout, at 55c each.

HOFFMAN FRAMES: Made of cypress at $6.00 per 100; white pine, best frame made, $8.00 per 100.

A lot of other bargains—let us quote you.

One of the Many Unsolicited Letters We Receive:

Alexandria, La., April 17, 1921.

The Stover Apiaries, Mayhew, Miss.

Gentlemen: The shipment of beehives ordered of you sometime ago, received on the 15th instant.

I hasten to express my surprise; the extra good quality of the frames, extracting supers, and the cover is the best that I have ever used, tho I have supplies from more than ten different supply houses. I cannot understand how you can sell this grade of goods for the prices you are selling it. Your goods are by far the best that I have ever used. I have some covers that I paid $1.98 each for, and I think the one-piece cover that I paid $1.00 for from you is the best cover.

I have strongly recommended your goods to Mr. Day C. Patterson and Mr. M. G. Bennard of this City, who promised me that they would give you a trial order.

If you so desire, you may use this letter or any part of it for advertising purposes.

Hoping that I will have the occasion to give you a larger order in the future,

Respectfully yours,

115 Desoto St. W. S. JOHNSON.

THE STOVER APIARIES

MAYHEW, MISS.